Chapter 1 Introduction and Background

1.1 Introduction

The California State Board of Forestry and Fire Protection (BOF) is proposing to initiate the California Statewide Vegetation Treatment Program (VTP). The BOF provides policy leadership and generates public interest in the state's forests and rangelands. This program intends to lower the risk of catastrophic wildfires on nonfederal lands by managing vegetation to modify/reduce hazardous fuels. While history has shown that catastrophic wildfires can result in substantial loss of life and property, and cost millions of dollars in fire suppression, the key goal of this program is to prevent loss of lives, reduce fire suppression cost, reduce private property losses and protect natural resources from devastating wildfire. Other VTP goals include control of unwanted vegetation, including invasive species, improvement of rangeland for livestock grazing, improvement of fish and wildlife habitat, enhancement and protection of riparian areas and wetlands (see Glossary for definition of riparian areas and wetlands), and improvement of water quality in priority watersheds. The initiation of this program is a project, subject to California Environmental Quality Act (CEQA). As the CEQA lead agency, the BOF will provide policy direction for implementation of the VTP to the California Department of Forestry and Fire Protection (CAL FIRE), which currently administers a wide range of vegetation management programs.

1.2 Need for Vegetation Management

Fire Protection

The wildlands of California are naturally fire prone. Past land and fire management practices have had the effect of increasing the intensity, rate of spread, as well as the annual acreage burned on these lands (BOF, 2010). Although the citizens of California expect these lands to provide a wide range of sustainable economic and non-economic benefits, the expanding population increases the risk unintentional fire starts or even arson caused fires that jeopardize these expectations. While most of the natural communities of plants and animals have adapted to natural fire conditions, these natural communities are now at risk from catastrophic wildfire primarily due to the hazardous fuel conditions. Also at risk are the communities that interface with these wildlands, including those within wildland-urban interface (WUI) and rural areas. Strategic management and control of wildland vegetation is essential to the safety, health, recreational, and economic well-being of California's citizens.

In recent years, the severity and intensity of wildfires in the West has increased dramatically from levels in the 1970s and 1980s; currently, a million or more acres across the West burn annually. However, while millions of acres burn annually; many more acres have not burned over the course of this same period. Moreover, areas where the natural fire frequency has been disrupted (extended) the spatial distribution and abundance of vegetation has also changed; this change has increased hazardous fuel conditions and increased risk (risk is defined as "the chance of a fire starting as determined by the presence and activity of causative agents") and threat (threat is defined as "the expected fire frequency and physical ability to cause impacts"). Components include surface fuels, topography, fire history, and weather conditions from catastrophic wildfires. Much of this change in

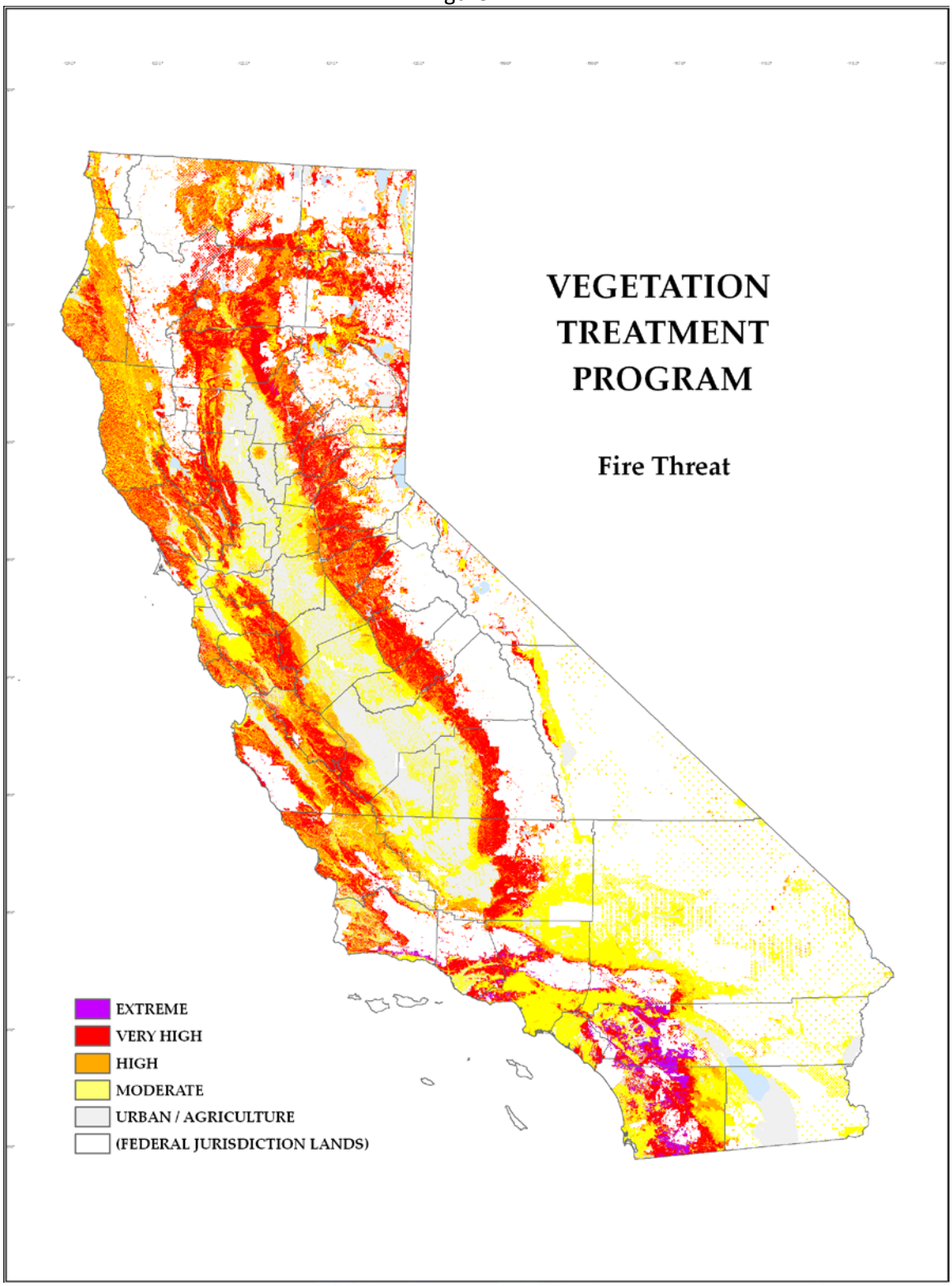
threat (Figure 1.1) can be attributed to fire exclusion policies over the past 100 years (Bureau of Land Management, 2005; Westerling, et al., 2006).

Wildfires are becoming more intense and severe (University of California, Davis, 1996) and, as more people move to rural areas, the potential for the loss of property and life continues to increase. For example, on the west slope of the Sierra Nevada, projections of risk from wildfire occurrence are highest in oak woodlands, chaparral, and low-elevation conifer forests (University of California, Davis, 1996). The number of people living in these areas is projected to increase from 600,000 in 1990 to two million people in 2040.

Wildland fire is pervasive throughout California. The average annual acreage burned (by wildfires greater than 300 acres in size) between 1985 and 1994 was about 325,000 acres (CAL FIRE, 2006). Between 1995 and 2004, the average annual acreage burned statewide increased to about 471,000 acres, representing a 45% increase. Between 2004 and 2010 the average increased dramatically (due to the extreme fire year in 2008) to 600,000 acres, yet the last few years have been relatively low at around 230,000 acres. Excluding the extreme fire year of 2003, when 5,394 structures were burned, the average number of structures burned between 2000 and 2005 is 458 structures/year, with average structural damage of $109 million per year. Between 2005 and 2010 the average number of structures burned on all lands in California was 1,166 with damages estimated at $207 million per year. ([http://bof.fire.ca.gov/ incidents/incidents_statsevents#2010] large fire statistics.pdf). In 2005 CAL FIRE suppression costs were $117 million while costs in real dollars nearly doubled between 2006 and 2010, increasing from a yearly average of $155 million (between 2000 and 2005) to $311 million (CAL FIRE, 2011).

While the cause and degree is controversial, climate change may already be influencing trends in wildland fire acreage burned. Scientists at the USDA Forest Service Pacific Northwest Forest and Range Experiment Station have modeled the effects of global warming on vegetation and fire weather in California. Current forecast models indicate that there will be an increase in grasslands, an increase and shift to the east and upslope of mixed evergreen hardwood forests, a decrease and shift to the east and upslope of conifer forests, and a decrease in oak woodlands and shrublands (Lenihan, 2003). Some scientists project average air temperatures to increase significantly, perhaps 4-6° F over the next century. Precipitation will either increase or decrease, depending on the scenario modeled. Under wetter conditions, fuels will build up to such an extent that during drier summers fires will burn with great intensity. More area will be burned than at present, but at irregular intervals (Westerling, et. al., 2006). Under drier conditions the fire season will lengthen and fires will burn more frequently. Again, the area burned by wildfires will increase. Also under these projections, snow packs at higher elevations are expected to decrease, with resulting in earlier snowmelts, which will decrease streamflows earlier in the year.

Figure 1.1


VEGETATION
TREATMENT
PROGRAM
Fire Threat
EXTREME
VERY HIGH
HIGH
MODERATE
URBAN / AGRICULTURE
(FEDERAL JURISDICTION LANDS)

For years, managers have recognized the risks of damage to housing and infrastructure from wildland fire and have acted to reduce wildland fuels, by thinning, prescribed burning, and other vegetation treatments. Thinned areas have proven to act as fuel breaks when impacted by wildfire (Skinner et al., 2004; North et al., 2009). Well planned prescribed burning can be an effective means of reducing fuels that result from long periods of fire exclusion while moderating potential ecosystem damage (Knapp et al., 2005). Reducing fire intensity through vegetation management can substantially aid in wildland fire containment and control, while creating safety zones for fire fighter and citizen safety (CAL FIRE, 2003).

Non-native Invasive Plants

In addition to the increases in wildfire occurrence and severity, non-native invasive plants, including such species as star thistle and scotch broom, have become the dominant vegetation on 20 million acres of California wildlands (CAL FIRE, 2010). These species threaten water quality and quantity, native plant communities, wildlife habitat, wilderness values, recreational opportunities, and livestock forage, and are detrimental to agriculture, commerce and public health. Vegetation treatments such as physical removal, spraying with herbicides, etc. can help to reduce the extent of invasive species, though it is also recognized that treatments can also introduce invasive species.

Resource Management

Resource management and natural agents have changed the structural characteristics of California forests (CAL FIRE, 2010). The lack of open forest stands and associated plant communities in some areas is of particular concern to the public and to resource managers. Another concern is maintenance of forest habitat containing large trees. Vegetation treatments can be used to create more open forest conditions, which will enhance the growth of trees and allow them to gain growth sooner, while minimizing the chance of the these forests being damaged or destroyed by fire, insects, or disease before they mature.

Wildlife diversity and population numbers are related to vegetative composition and structure. For example, some bird species previously considered common in forested habitats, but also requiring open shrub and herbaceous conditions within their habitat types, have shown marked long term population declines (CAL FIRE, 2010). Specially designed vegetation treatments can be utilized to improve such habitats. Game species such as deer and quail can also benefit from vegetation treatments. Improvement of fish and wildlife habitat can be the primary purpose of a VTP project.

The forests of California have a high capacity for timber production. A large percentage of soils in California are rich and produce diverse stands of conifers and hardwoods. California is the nation's greatest consumer of wood and paper, consuming about 10 billion board feet a year; however lumber production in California, at slightly less than 1.5 billion board feet, is at its lowest level in two decades (CAL FIRE, 2010). The 2010 timber harvest was only 24% of the 1988 harvest. Private timberlands generate about 90% of the total timber harvest in California. Growth on private timberlands and federal lands is statistically the same as or exceeds mortality and harvest combined. The decrease in harvest is related to environmental concerns and to a landbase that is often viewed by California's citizens as better utilized for purposes other than timber production.

Evidence from historical field studies also suggests that forest composition in California has substantially increased proportions of shade tolerant species, including hardwoods, while shade

intolerant species such as pine are in decline (CAL FIRE, 2010). Increased stocking of understory trees resulting from fire suppression raises the risk of unnaturally severe fires, as well as the potential for increased mortality due to pathogens. Vegetation treatments that open up the forest can improve the growth, health, and fire resistance of forest stands and increase the proportional stocking of shade intolerant and commercially valuable species.

Forests and rangelands provide forage used by livestock and wildlife. Rangelands in California are currently being grazed at a sustainable level and productivity is being maintained (CAL FIRE 2010). However, in the absence of periodic disturbance, the continued productivity of the state's rangelands is being threatened by the encroachment of non-native invasive plants and native shrubs. Vegetation treatments can help counter these negative trends, and improvement of rangeland condition is a primary objective of the VTP.

Soil Conservation and Water Quality

Over the last decade, there has been increased recognition of the influence of forest and rangeland soil and water conditions on ecological processes operating at the watershed level (CAL FIRE 2010). Historical land management practices have been tied to reduced water quality, especially those that result in soil erosion into streams. Untreated vegetation can create a significant fire hazard and result in large conflagration fires that can adversely affect the beneficial uses of water and soil productivity. Improvement of water quality in priority watersheds is one of the goals of vegetation treatments under the VTP. Water quality can be maintained or improved by proactive projects that improve hillslope vegetative cover and fire resistance, while incorporating protective measures, such as buffer zones around watercourses and installation of erosion control structures on roads (Cafferatta, 2007).

1.3 Regulatory Authority (Legislative Statute and BOF Regulations)

CAL FIRE is responsible for preventing and extinguishing wildland fires on State Responsibility Areas (SRAs) (Public Resource Code [PRC] 4113, 4125). SRAs are lands that provide forest or range products, watersheds not owned or managed by the federal government or within the boundaries of cities, and where CAL FIRE has the primary financial responsibility for preventing and suppressing fires. The BOF is responsible for identifying very high fire hazard severity zones on SRAs and areas protected by local fire agencies (Local Responsibility Areas, or LRAs). LRAs are lands where local agencies have the primary financial responsibility for preventing and suppressing fires. Lands where federal agencies are responsible for preventing and extinguishing wildland fires are called Federal Responsibility Areas (FRAs). Local agencies are required to designate, by ordinance, very high fire hazard severity zones and to require landowners to reduce fire hazards adjacent to occupied buildings. The intent of identifying areas with very high fire hazards is to allow CAL FIRE and local agencies to develop measures that would reduce the loss of life and property from uncontrolled wildfires (Assembly Bill 337 [Bates]).

Public Resources Code §4114 and §4130 authorize the BOF to establish a fire plan, which, among other things, establishes the levels of statewide fire protection services for State Responsibility Area (SRA) lands. The California Fire Plan (BOF, 2010) has as its highest priority enhancing the protection of lives, property and natural resources from wildland fire by identifying and evaluating wildland fire hazards to life, property and natural resource assets at risk as well as improving environmental resilience to wildland fire. The Plan was developed around the idea that there are certain central

policies that are critical to reducing and preventing the impacts of fire, which revolve around both suppression efforts and fire prevention efforts. Major policy components include:

- Land use planning that ensures increased fire safety for new development
- Creation of defensible space for survivability of established homes and neighborhoods
- Improving fire resistance and structural survivability of homes and other constructed assets
- Fuel hazard reduction that creates resilient landscapes and protects the wildland and natural resource values
- Adequate and appropriate levels of wildland fire suppression and related services
- Commitment by individuals and communities to wildfire prevention and protection through local fire planning

CAL FIRE implements vegetation treatments under PRC Sections 4474-4494. PRC Sections 4461-4475 gives CAL FIRE authority to implement the current Vegetation Management Program and to enter into contracts with landowners or other persons to conduct vegetation treatments within defined vegetation types. In addition, with the 2005 passage of SB 1084, the Legislature modified and in some cases added language to PRC 4475-4494, which 1) broadened CAL FIRE's range of vegetation treatment practices beyond those described for the existing Vegetation Management Program, 2) added a definition of "hazardous fuel reduction", and 3) made other changes to the major statutory provisions guiding CAL FIRE's vegetation treatment authorities.

California PRC Sections 4790-4799.04 provides the regulatory authority for CAL FIRE to administer the California Forest Improvement Program (CFIP).

California PRC 4562 mandates that the Board adopt fire protection zones where specific protection measures are to be identified, including vegetation treatments within and adjacent to timber operations.

Finally, PRC 4290 and 4291 give CAL FIRE the authority to enforce the 100-foot defensible space requirement around all buildings and structures on non-federal 1) SRA lands (PRC 4290); or 2) on forest-covered lands, brush-covered lands, grass-covered lands, or any land that is covered with flammable material (PRC 4291).

1.4 Description of CAL FIRE Programs that Carry Out Vegetation Treatments

CAL FIRE currently implements vegetation treatments through various programs, including: the current Vegetation Management Program (VMP), CAL FIRE's Prefire Management Initiative, Proposition 40 Fuels Reduction Program, and the California Forest Improvement Program (CFIP) (BOF, 1996). The existing programs are briefly described in this section. In addition, CAL FIRE regulates commercial timber harvesting on private lands, which manipulates fuel composition and arrangement. However, the timber harvest program is administered through an environmental review process that is separate from the proposed VTP.

The current VMP reduces the potential for large wildfires and enhances natural resources by treating the following vegetation types, and primarily on SRA lands where CAL FIRE is responsible for fire protection:

a) Coastal scrub habitat south of San Luis Obispo County,

b) Montane hardwood-conifer habitat north of Monterey County,

c) Mixed chaparral, montane chaparral, chamise-redshank, and valley foothill hardwood habitats throughout their range, and

d) Annual and perennial grasslands that occur within the above vegetation types.

Although the VMP emphasizes treatment of rangelands, it also meets a wide variety of other objectives, including protecting human life and property, reducing fire suppression costs, enhancing wildlife habitat, improving commodity production (e.g., livestock grazing and water yield), and reducing the potential for long-term detrimental effects of wildfire (e.g., impacts from flooding, on air and water quality, and on soil productivity). Approximately 10.9 million acres are available for treatment under the VMP; however, the VMP is authorized to treat a maximum of 120,000 acres annually (CAL FIRE 1981). Because of funding limitations and other factors, (lack of suitable burn day conditions, cost and time to meet environmental review requirements, surveying for and mitigating treatment effects to threatened and endangered species, etc.), treatment has averaged less than 30,000 acres per year. Assistance for project funding is dependent on the availability of funds and staff, and consistency with the objectives of the VMP.

The Prefire Management Initiative is a blend of existing CAL FIRE programs — fire prevention, land-use planning, vegetation management and forest health improvement, with the addition of risk assessment and systems analysis expertise (BOF, 1996). The Pre-Fire Management Initiative is implemented through existing authority and gives CAL FIRE the leeway to allocate budget resources to conduct a systematic application of risk assessment, fire safety, fire prevention and fire hazard reduction techniques. The Pre-Fire Management Initiative emphasizes smaller projects adjacent to new developments in the WUI. Projects are chosen based on the most cost-effective means of protecting assets at risk from major disastrous wildfires. Normally, these projects are initiated by CAL FIRE Administrative Units. Pre-fire treatments include modifying/thinning/clearing vegetation outside the distance required under California's defensible space law (PRC 4291) such as establishing and maintaining fire safe landscaping, utilizing prescribed fire, mechanically creating fuel breaks, mechanically changing forest structure to modify wildland fire behavior, and/or establishing safety and protection zones around high value assets.

CAL FIRE also implemented the Fuels Reduction Program, funded by Proposition 40, the California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002. The goal of the Proposition 40 Fuels Reduction Program (which is due to end in 2012) is to reduce wildland fuels that pose a threat to watershed resources and water quality on nonfederal lands in areas with high or moderate levels of watershed assets at risk in the following fifteen Sierra Nevada counties: Butte, Plumas, Sierra, Yuba, Nevada, Placer, El Dorado, Amador, Alpine, Calaveras, Tuolumne, Madera, Mariposa, Fresno, and Tulare.

CAL FIRE implements the Proposition 40 Fuels Reduction Program by partnering with non-profit organizations, such as Fire Safe Councils, and with non-federal government agencies, through funding under the Watershed and Fuels Community Assistance Grants Program.

CFIP is a cost-share program aimed at improving the economic value and environmental quality of

private forestlands. The CFIP program is a voluntary program that can fund up to 75% (or 90% in the case of catastrophically-damaged lands) of an approved project. It applies to private landowners owning between 20 and 5,000 acres of commercial forestland. Landowners can submit group applications and forest landowners who own less than 20 acres can apply as part of a group. Applications for CFIP projects and administration of projects are made at the local CAL FIRE unit level. There is a 10-year requirement for maintenance of land uses compatible with funded work. The purpose of the program is to work cooperatively with private landowners, particularly smaller, non-industrial landowners, to upgrade the management of their lands and improve both the productivity of the land and the degree of protection and enhancement of the forest resource system as a whole. Fundable practices include:

(1) Preparation of forestland management plans
(2) Site preparation
(3) Planting and costs of seeds and seedlings
(4) Release from brush competition
(5) Young-growth stand improvement
(6) Forest land conservation measures
(7) Fish and wildlife habitat improvement
(8) Follow-up work

Table 1.1 shows the environmental and planning documents that guide the existing vegetation treatment programs carried out by CAL FIRE.

Table 1.1
CAL FIRE Vegetation Treatment Program Guidance Documents

PROGRAM	RELEVANT DOCUMENTATION
Vegetation Management Program	Vegetation Management Program Handbook and Field Guide. June 16, 2001. California Department of Forestry and Fire Protection. Sacramento. 135p. Chaparral Management Program Final Environmental Impact Report. May 18, 1981. California Department of Forestry and Fire Protection, Sacramento.
Proposition 40 Fuels Reduction Program (ends 2012)	Procedural Guide for Community Assistance Grant Fuel Reduction Projects Funded by Proposition 40; Sierra Nevada Forest Land and Fuels Management; California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002. January 2006. California Department of Forestry and Fire Protection, Sacramento. 40p.
California Forest Improvement Program	California Forest Improvement Program Operations Manual. August 2005. California Department of Forestry and Fire Protection, Sacramento. Final Environmental Impact Report for Proposed Administrative Regulations for the California Forest Improvement Program to be Adopted by the Director of Forestry and Approved by the Board of Forestry. June 1979. California Department of Forestry and Fire Protection, Sacramento. California Forest Improvement Program Environmental Impact Report: Supplement to the Final EIR; State Clearinghouse #79050318. June 1990. California Department of Forestry and Fire Protection, Sacramento.

1.5 Other Agencies Involved in Regulation of Vegetation Treatment Projects

There are three tiers of agency involvement in implementing VTP projects outside of CAL FIRE. As noted above, the Board of Forestry is the lead agency for the VTP EIR and is responsible for overall decision-making at the programmatic level.

The California Department of Fish and Game (DFG) is a trustee agency since it manages the state's fish and wildlife resources on behalf of the citizens of the State of California. As such, its duties and responsibilities are generally higher than the next lower tier of regulatory agencies, the responsible agency. For the VTP - because DFG is a trustee agency - CAL FIRE will be required to consult on and coordinate all VTP projects directly with DFG. Another trustee agency in California is the Department of Parks and Recreation (DPR). VTP projects can and probably will take place on Parks and Recreation lands, however it is likely that in those cases, DPR will act as lead agency rather than deferring to CAL FIRE as the lead agency.

A somewhat lower tier of other state agency involvement in the VTP includes responsible agencies that will use this EIR as the basis for making their own regulatory approvals such as DFG issuing a Lake and Streambed Alteration Agreement (1602 permit see Glossary) or Regional Water Quality Control Boards (RWQCB) being requested to issue a waiver from waste discharge requirements. Other responsible agencies likely to be involved in VTP project regulatory oversight and approval include the Coastal Commission or other agency with an approved Local Coastal Plan, Air Pollution Control Districts (APCD), and the Air Quality Management Districts (AQMD). Note that in this case, DFG is a trustee agency and could also be a responsible agency if a 1600 permit were required for a specific project.

The third tier of state agency involvement includes commenting agencies (Department of Pesticide Regulation, etc.) and other State or local agencies that will use this EIR as documentation to implement their own vegetation treatments.

In some cases a federal agency may become involved such as on federal land under the jurisdiction of the program. The two federal agencies likely to be involved in VTP projects are the U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Agency fisheries branch (NOAA Fisheries – formerly National Marine Fisheries Service), which are the federal agencies that CAL FIRE would consult with if a VTP project were scheduled on or very near to federal lands.

The likely nexus for bringing in responsible agencies include projects using prescribed fire, such as pile burning and broadcast burning, which are required to comply with the local Air Quality Management Districts (AQMD) and Air Pollution Control Districts (APCD) burn requirements, such as having a burn permit or burning only on burn days. At this time, RWQCBs have not set waste discharge requirements for vegetation management projects carried out by CAL FIRE (except the Lahontan Board which requires CAL FIRE vegetation treatment projects to meet the Lahontan Board's waiver requirements). However, most of the CAL FIRE programs that implement vegetation management projects have rules and regulations that have been reviewed and/or approved by either the State Water Quality Control Board or by Regional Boards. The removal of vegetation within the coastal zone is defined as a "development" project and subject to permitting by the Coastal Commission or the local government agency that has an approved Local Coastal Plan, as such the Coastal Commission is likely to be an active responsible agency for VTP projects near the coast.

In addition, the RWQCB may use this document for any necessary National Pollutant Discharge Elimination System (NPDES) permits for application of herbicides, and the California Department of Fish and Game may use it for Lake and Streambed Alteration agreements and any permits required under the California Endangered Species Act (CESA).

1.6 Decisions Subject to the California Environmental Quality Act

The California Environmental Quality Act (CEQA) applies only to discretionary projects by public agencies. A "project" is defined as the whole of an action, which has the potential for resulting in either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment. (CEQA Guidelines sec. 15378(a); PRC 21065).

A "project" under CEQA is considered to be an activity directly undertaken by a public agency, an activity that is supported, in whole or in part, through public agency contracts, grants, subsidies, loans, or other assistance from a public agency, or an activity involving the public agency issuance of a lease, permit, license, certificate, or other entitlement for use by a public agency. An agency is generally not permitted to treat each separate permit or approval under a program, such as the VTP, as a separate project segment if the effect is to avoid full disclosure of environmental impacts. However, CEQA does encourage the application of a programmatic approach where a group or series of projects are similar in activities and impacts and where potential impacts can be avoided or mitigated in a similar manner. Section 1.8 describes the relationship between CEQA projects and the CEQA requirements for this Program.

1.7 Proposed Program Purpose and Goals

In furtherance of the goals of the 2010 Fire Plan (specifically goal 1 which relates to human and natural resources at risk and goal 5 which relates to integrating fire and fuels management practices with landowner priorities and multiple jurisdictional efforts within local, state and federal responsibility areas), the purpose of the VTP is to modify vegetation on wildlands to reduce the costs and losses associated with wildfires and to enhance the condition of forests, rangelands, and watersheds.

The goals of the VTP include:

1. Maintain and enhance forest and range land resources including forest health to benefit present and future generations.
2. Modify wildland fire behavior to help reduce catastrophic losses to life and property consistent with public expectation for fire protection.
3. Reduce the severity and associated suppression costs of wildland fires by altering the volume and continuity of wildland fuels.
4. Reduce the risk of large, high intensity fires by restoring a natural range of fire-adapted plant communities through periodic low intensity vegetation treatments.
5. Maintain or improve long term air quality through vegetation treatments that reduce the severity of large, uncontrolled fires that release air pollutants and greenhouse gases.
6. Vary the spatial and temporal distribution of vegetation treatments within and across watersheds to reduce the detrimental effects of wildland fire on watershed health.
7. Reduce noxious weeds and non-native invasive plants to increase desirable plant species and

improve browse for wildlife and domestic stock.

8. Improve wildlife habitat by spatially and temporally altering vegetation structure and composition, creating a mosaic of successional stages within various vegetation types.
9. Provide a CEQA-compliant programmatic review document process/mechanism for other state or local agencies, which have a vegetation management program/project consistent with the VTP, to utilize this guiding document to implement their vegetation treatment programs/project.

A variety of vegetation treatments are typically used in combination to achieve the goals or outcomes noted above. Some prescriptions used to meet the outcomes above are creation of fuel breaks, fuel management zones, defensible space and prescribed fire. Some of these prescriptions are briefly described below:

Typical Treatments to Meet VTP Goals

Fuel Break— Fuel breaks are wide strips of land where trees and vegetation have been reduced or removed. These areas can slow, and even stop, the spread of a wildland fire because they provide fewer fuels to carry the fire. They also provide firefighters with safe zones to take a stand against a wildfire, or retreat from fire if the need arises. Typically, fuel breaks are located in strategic locations based upon terrain, existing roads, community areas, and other key access points. Fuel breaks can be divided into two categories, shaded and non-shaded.

Non-Shaded Fuel Break—A fuel break without shade normally comprises a change in vegetation type, such as from forest or shrubland into grassland. Since a large opening is essentially cleared of woody vegetation to create a non-shaded fuel break, heavy equipment is typically used for construction, except on steep slopes, where manual or prescribed fire treatments are employed. (Figure 1.2).

Figure 1.2
Non-Shaded Fuel Break

Shaded Fuel Break—A shaded fuel break is constructed in a forest setting. Typically, the tree canopy is thinned to reduce the potential for a crown fire to move through the canopy. The woody understory vegetation is likewise thinned out, and in certain situations is eliminated. The shade of the

retained canopy helps reduce the potential for rapid re-growth of shrubs and sprouting hardwoods and can reduce rill and gully erosion. (Figure 1.3).

Figure 1.3
Before and After Shaded Fuel Break

Both shaded and non-shaded fuel breaks are constructed using a mix of treatments, such as uprooting vegetation using a tractor blade (preferably a comb-like "brush blade") or severing vegetation at the root line manually with a chainsaw. Thinning of the canopy may allow for harvest of merchantable and non-merchantable timber. Mastication (grinding into small pieces using a large grinding head mounted on a piece of heavy equipment) may be used to thin understory vegetation. Slash created by fuel break installation can be treated by removal from the fuel break area, piling and burning, mastication, chipping or lopping and scattering (see Glossary). Fuel breaks can be maintained by a repeat of the treatments that were used for construction or by a different treatment, such as prescribed fire, herbivory, or the use of herbicides.

Fuel Management Zones—These are areas, usually surrounding communities, where the natural vegetative cover is reduced in density, though not usually to the level of reduction typical of a fuel break. After installation of the treatment prescription, fuel ladders (see Glossary) are greatly reduced, and overstory and understory vegetation is spatially separated so that a ground fire will not, under normal fire conditions, climb into the canopy and turn into a crown fire. If a crown fire does start, the separation of fuels will prevent it from spreading across more than a small portion of the treated area, and will likely force it instead to drop back to the ground where it is more defendable. Installation of fuel management zones is typically accomplished through a combination of mechanical and manual treatments. If commercial products are removed, a permit is required. Fuel management zone slash treatment and maintenance are similar to that used for fuel breaks.

Large Scale Wildland Treatment—These are areas up to the watershed scale, or even greater, that are treated to reduce highly flammable or dense fuels, including live brushy plants in some vegetation types (such as chaparral), a build up of decadent herbaceous vegetation or, dead woody vegetation. Treatment is typically accomplished by the use of prescribed fire or a combination of prescribed fire, mechanical treatment, and hand work (cutting and piling in specific areas). Successful treatment should result in a mosaic of trees, shrubs and herbaceous vegetation based on slope, aspect and soil type. The fuel that is removed reduces the chance of crown fires, providing large areas where wildland fires will slow or stop, and offering fire fighters zones of opportunity to stop the advance of wildfire. Such

treatment can result in improved plant species composition and increased forage for wildlife and livestock if specifically outlined as a project objective (Figure 1.4).

Figure 1.4
Before and After Fuel Management Zone

Defensible Space—Defensible space is an area within the perimeter of a parcel, development, neighborhood, or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching wildfire, or defense against encroaching wildfires or escaping structure fires. The perimeter is defined as the area encompassing the parcel or parcels proposed for construction and/or development, excluding the physical structure itself. The establishment and maintenance of emergency vehicle access, emergency water reserves, street names, building identification, and fuel modification measures characterize the area. The configuration of post-treatment vegetation can be similar to that of a shaded fuel break. Defensible space installation in heavily populated areas is often accomplished by manual methods rather than heavy equipment, though both can be used, depending on safety concerns, noise, and visual impact. The most common slash treatment utilized within defensible spaces is hand pile and burn, although chipping, mastication and lop and scatter can be used when slash quantities are relatively light. Homeowners, typically employing hand treatments or herbicides, often do their own maintenance within defensible space installations (Figure 1.5).

Figure 1.5
Before and After Defensible Space

1.8 Purpose of Programmatic Environmental Impact Reports

The California Environmental Quality Act (CEQA) requires that state agencies disclose to decision makers and the public the environmental effects of proposed activities. In addition to providing an analysis of the environmental impacts of a project or program, other objectives of CEQA include:

- Identify and prevent environmental damage
- Disclose agency decision making
- Enhance public participation
- Foster intergovernmental coordination

The objective of this Programmatic Environmental Impact Report (PEIR) is to analyze the potential environmental effects of the Proposed Program (the Statewide Vegetation Treatment Program, or VTP), identify ways to mitigate potential adverse impacts resulting from the identified treatments of the VTP, and evaluate alternatives to the VTP.

The PEIR is a device originally developed by federal agencies under the National Environmental Protection Act (NEPA). Use of this approach was recommended for CEQA in the court decision of *County of Inyo v. Yorty*. The PEIR can be used effectively with a decision to carry out a new governmental program or to adopt a new body of regulations in a regulatory program. The PEIR enables the agency to examine the overall effects of the proposed course of action and to take steps to avoid unnecessary adverse environmental effects.

Use of a PEIR enables the Lead Agency to characterize an overall program as the project being approved at that time. Following this approach, when individual activities within the program are proposed by either the lead agency or other agency tiering off of the PEIR, the agency is required to examine the individual activities to determine whether their effects were fully analyzed in the PEIR. If the activities would have no effects beyond those analyzed in the PEIR, the agency can assert that the program activities are part of the program that was approved by the decision maker, and no further CEQA compliance is required. This approach offers many possibilities for agencies to reduce their costs of CEQA compliance and still achieve high levels of environmental protection. (Section 21083, Public

Resources Code; Reference: Section 21003, Public Resources Code; *County of Inyo v. Yorty*, (1973) 32 Cal. App. 3d 795)

The role of the PEIR in environmental compliance documentation is to describe and analyze a series of related projects or activities that collectively are considered under CEQA as one large project with similar environmental effects that can be mitigated in similar ways. The PEIR eliminates the need for separate EIRs for each project (State CEQA Guidelines 15168), thereby streamlining the administrative process for subsequent projects by assessing the cumulative impacts of the larger program and developing program-wide policies, guidelines, and mitigation measures that should not have to be reconsidered for individual projects.

PEIR Cumulative Effects Analysis

A major objective of the PEIR is to identify and address the potential impacts of implementing the VTP. To meet this objective, the PEIR addresses the program-level impacts of vegetation treatments at the statewide level along with other agencies' vegetation treatment programs (e.g. USFS, BLM, National Park Service (NPS), etc.) plus other related projects. Mitigation measures developed as a result of an analysis of cumulative impacts will ensure that a series of projects conducted under the VTP does not result in unrecognized large-scale impacts.

Standard Practices and Mitigation Measures

Because the PEIR analyzes the full range of VTP treatments and their potential impacts to resources, it can also identify and prescribe measures that can reduce those potential impacts to a less than significant level. Standard practices, minimum management requirements, and, if necessary, mitigation measures are used in all projects as well as a requirement that all projects be accompanied by a VTP PEIR checklist documenting adherence to all of the Program requirements.

Scope of Project Implementation

When the PEIR is relied on during implementation of subsequent activities, the Lead Agency must incorporate feasible mitigation measures and alternatives developed in the PEIR into the subsequent activities. If a public notice is required for the subsequent activities, the Lead Agency must state in the notice that the proposed activity is within the scope of the PEIR. (CEQA Guidelines sec. 15168(e)).

1.9 PEIR and Program Duration

The PEIR will remain in effect until such time as substantial changes in conditions occur or significant environmental impacts are identified that were not previously addressed in the PEIR. When either of these situations occurs, the PEIR may be amended or supplemented to address such new information. VTP projects could occur well into the future as long as the conditions within the project area do not change substantially beyond the conditions described in the document.

1.10 Organization of the PEIR

The content and format of this PEIR are designed to meet the requirements of CEQA and the Guidelines. The report is organized into the following chapters:

- The Executive Summary summarizes the need for the program, the program objectives, the Proposed Program and the Alternatives, conclusions regarding impacts of the Proposed Program, and issues of concern.
- Chapter 1 describes the responsibility of CAL FIRE and the BOF, and the need for the VTP, the Proposed Program objectives, and the purpose of the PEIR.
- Chapter 2 describes the Proposed Program.
- Chapter 3 describes the Alternatives to the Proposed Program.
- Chapter 4 describes the environmental setting.
- Chapter 5 describes the environmental impacts and mitigation measures.
- Chapter 6 describes the cumulative impacts of implementing the Proposed Program and the Alternatives.
- Chapter 7 describes monitoring.
- Chapter 8 is the Environmental Checklist for projects.
- Chapter 9 describes the public scoping process.
- Chapter 10 lists the individuals involved in preparation of the PEIR.
- Appendices.

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Chapter 2 Proposed Program

2.1 Overview of Proposed Program

The Vegetation Treatment Program (VTP) proposes to treat vegetation in order to meet the goals previously described. Vegetation may be treated by hand, mechanically using equipment, by prescribed fire, biologically using domestic livestock, and/or using herbicides (hereafter the term 'herbicides' also includes the application of borax as a fungicide – borax is the only non-herbicide chemical proposed for use in the VTP). Combinations of these treatments may occur in order to achieve the desired objective(s).

The vegetation types that would potentially be treated (Table 2.1) or are unlikely to be treated (but could be treated) comprise about 38,000,000 acres while about 22 million acres would be excluded from treatment. The 38,000,000 acres that might be treated under the Proposed Program are comprised of about 34,958,000 acres, which are either privately owned or State owned lands (e.g. Department of Parks and Recreation (DPR) lands) that are designated as SRA or LRA, and about 3,000,000 acres of federal DPA lands (see glossary for description of DPA). Figure 2.1 shows the bioregions where treatments would take place (see Section 4.1 for a description of the bioregions). Table 2.2 and Figure 2.2 summarize the vegetation status within the program by responsibility area, bioregion and California Wildlife Habitat Relationship (WHR) life form (Mayer and Laudenslayer, 1988).

Table 2.1
Vegetation Status in Program

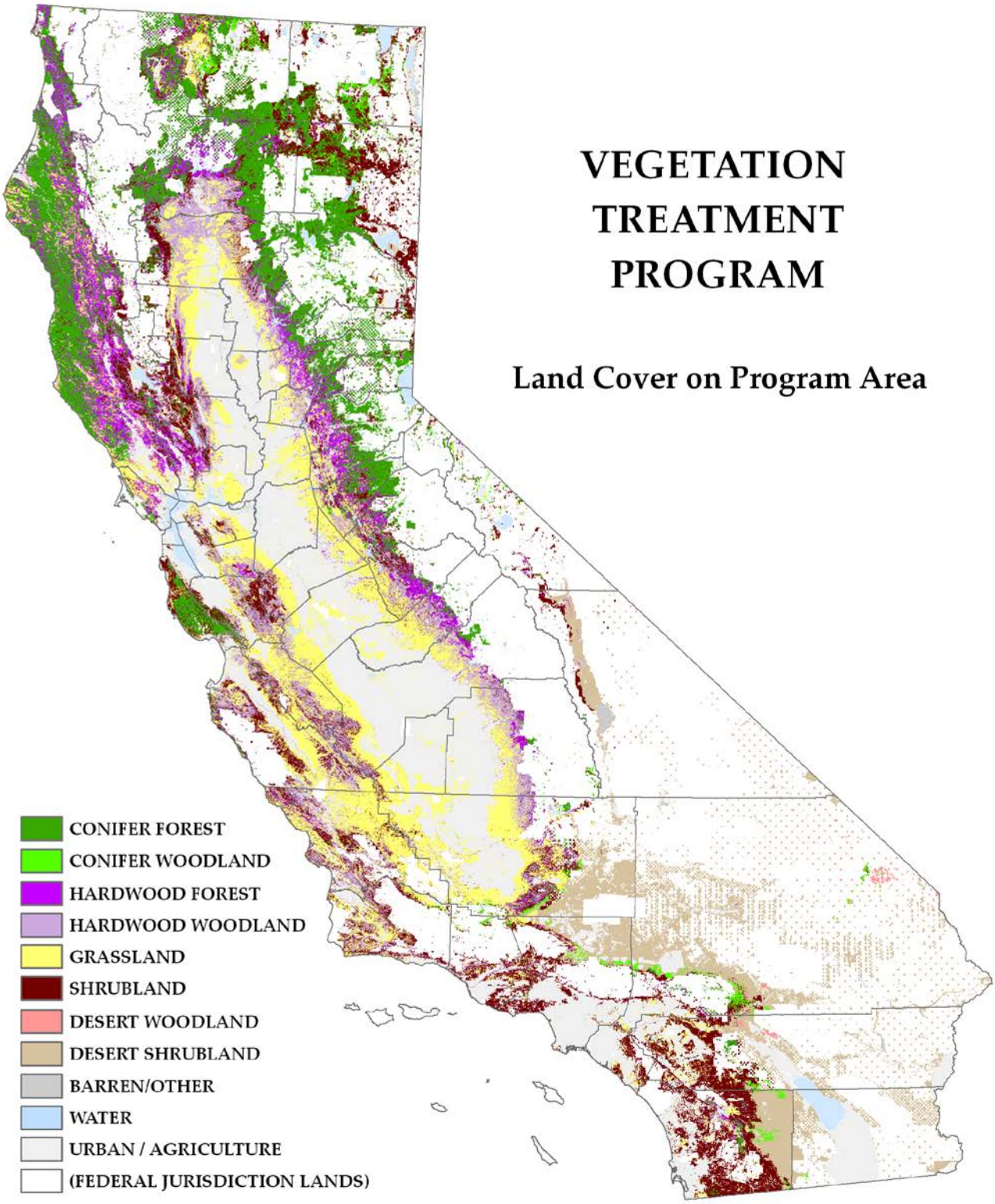
CWHR LIFE FORM – VEGETATION TYPE	TREATABLE	CWHR LIFE FORM – VEGETATION TYPE	TREATABLE
Annual and Perennial Grasslands	Likely	Cropland	Excluded
Closed Cone/Pine/Cypress	Likely	Deciduous Orchard	Excluded
Douglas-fir Forests	Likely	Desert Riparian	Excluded
Eucalyptus	Likely	Desert Wash	Excluded
Jeffrey, Ponderosa, Lodgepole & Eastside	Likely	Dryland Grain Crops	Excluded
Juniper	Likely	Estuarine	Excluded
Mixed Conifer Forests	Likely	Evergreen Orchard	Excluded
Montane Hardwood Conifer	Likely	Fresh Emergent Wetland	Excluded
Pinyon Juniper	Likely	Irrigated Grain Crops	Excluded
Redwood	Likely	Irrigated Hayfield	Excluded
Sagebrush	Likely	Irrigated Row and Field Crops	Excluded
Various Oak Woodland	Likely	Lacustrine	Excluded
Various Shrub Types	Likely	Orchard - Vineyard	Excluded
Wet Meadow	Likely	Palm Oasis	Excluded
Alpine-Dwarf Shrub	Unlikely	Irrigated Pasture	Excluded
Desert Scrub	Unlikely	Rice	Excluded
Desert Succulent Shrub	Unlikely	Riverine	Excluded
Joshua Tree	Unlikely	Saline Emergent Wetland	Excluded
Alkali Desert Scrub	Unlikely	Urban	Excluded
Agriculture	Excluded	Vineyard	Excluded
Barren	Excluded	Water	Excluded

Figure 2.1
Bioregions

Table 2.2
Acres in Proposed Program by Life Form, Protection Area and Bioregion

LRA Only	Conifer Forest	Conifer Woodland	Desert Shrub	Desert Woodland	Hardwood Forest	Hardwood Woodland	Herbaceous	Shrub	Grand Total
LRA									
Klamath/North Coast	21,500	1,100			18,700	14,500	48,300	15,500	119,600
Modoc	9,000	1,800			6,000	3,200	17,400	109,100	146,500
Sacramento Valley					3,100	77,900	280,100	600	361,700
Sierra Nevada	42,000	500	4,200		9,000	7,500	48,800	24,200	136,200
Bay Area / Delta	11,000				27,000	81,300	323,000	14,900	457,200
San Joaquin	300				100	15,500	604,800	3,600	624,300
Central Coast	900	200			11,800	21,000	89,600	19,200	142,700
Mojave		31,400	2,169,400	65,400	1,900	100	2,600	24,600	2,295,400
South Coast	4,200	600	12,200		9,200	44,000	213,100	321,200	604,500
Colorado Desert		10,900	1,132,800	13,900		1,000	224,000	1,800	1,384,400
LRA Subtotal	**88,900**	**46,500**	**3,318,600**	**79,300**	**86,800**	**266,000**	**1,851,700**	**534,700**	**6,272,300**
SRA + DPA									
Klamath/North Coast	4,038,600	107,500			1,340,400	656,300	971,700	912,000	8,026,500
Modoc	1,513,000	279,100			91,700	208,900	141,900	1,230,900	3,465,500
Sacramento Valley	100				14,800	445,400	673,800	26,200	1,160,300
Sierra Nevada	1,684,400	43,700	74,300	100	1,094,900	1,126,800	1,666,000	770,400	6,460,600
Bay Area / Delta	529,200	200			451,600	557,200	970,300	376,100	2,884,600
San Joaquin	2,300	19,500	700		3,200	57,100	1,032,100	57,900	1,172,800
Central Coast	39,100	20,400	100		64,500	1,312,700	2,355,900	1,046,600	4,839,300
Mojave	9,800	126,700	440,000	12,400	13,400	18,500	52,100	139,900	812,800
South Coast	95,300	26,700	66,300	1,900	42,700	166,100	282,300	1,502,000	2,183,300
Colorado Desert	900	52,000	368,900	300	1,000	4,900	4,300	248,200	680,500
SRA+DPA Subtotal	**7,912,700**	**675,800**	**950,300**	**14,700**	**3,118,200**	**4,553,900**	**8,150,400**	**6,310,200**	**31,686,100**
Grand Total	**8,001,600**	**722,300**	**4,268,900**	**94,000**	**3,205,000**	**4,819,900**	**10,002,100**	**6,844,900**	**37,958,700**

Figure 2.2


VEGETATION
TREATMENT
PROGRAM
Land Cover on Program Area
CONIFER FOREST
CONIFER WOODLAND
HARDWOOD FOREST
HARDWOOD WOODLAND
GRASSLAND
SHRUBLAND
DESERT WOODLAND
DESERT SHRUBLAND
BARREN/OTHER
WATER
URBAN / AGRICULTURE
(FEDERAL JURISDICTION LANDS)

CAL FIRE would act as the lead agency for all projects on SRA lands, except for projects on DPR lands where State Parks may act as the lead agency. For projects on DPA lands where the majority of the funding is provided by the VTP, CAL FIRE would act as the lead agency but would be required to complete the necessary CEQA and NEPA compliance (see Section 2.6 How the Program Would Be Implemented for further details).

2.2 Landscape Available To Be Treated

Not all of the total landscape shown above (38 million acres) would be treatable, due to the following landscape constraints that limit where the Program could be applied:

1. A watercourse and lake protection zone (WLPZ) will be established on each side of all Class I and II watercourses (see Glossary for definitions) that is equal to the widths specified in the CA Forest Practice Rules, which vary between 75-150 feet on each side of Class I watercourses and from 50-100 feet on each side of Class II watercourses. WLPZs are measured by slope distance from the high water mark of the watercourse. Vegetation significant to maintenance of watercourse shade will not be disturbed within Class I and II watercourses. Vegetation within and adjacent to Class III watercourses will be retained, as feasible, to protect water quality.
2. Heavy earth-moving equipment will not operate within the WLPZ of any Class I or II watercourse without a California Department of Fish and Game (DFG) Streambed Alteration Agreement, as indicated above except at existing or designated crossings. An exception to this practice may be allowed when conducting fish and wildlife habitat improvement or forestland conservation projects (see 3, below). Wider protection zones may be required on some sites if so indicated by environmental review of the project.
3. Treatment of wet meadows, bogs, fens, marshes, vernal pools, and other wet areas, as well as the use of wet areas as natural barriers for containing prescribed fire, are permitted when such projects will result in maintenance and/or improvement of habitat for native plant and/or animal species. Necessary measures (such as obtaining a US Army Corps of Engineers (ACOE) wetland delineation, DFG consultation, PEIR mitigation measures, etc.) to minimize damage to wetlands will be incorporated into each such project.
4. Treatments using heavy earth-moving equipment will not take place on known potential or active geologically unstable areas unless specific measures to minimize the effects of operations on slope stability are incorporated into project design. For potential operations on slopes mapped as high or very high geologic hazard, California Geologic Survey (CGS) will be requested to provide geologic review.
5. Appropriate buffer zones, seasonal restrictions, firing techniques, etc., consistent with regulatory guidelines and recognized taxa-specific conservation measures, shall be implemented in areas where special status species, as defined by DFG (DFG, 2006), are known to occur. Such measures will be designed to protect and improve habitat for special status species. Occurrence information will be gathered primarily by a query of the most recent reasonably available and appropriate databases for biological information, and other reasonably available sources such as California Natural Diversity Database (CNDDB, 2006) or to the California Department of Fish and Game's BIOS database (DFG, 2007).

2.3 Minimum Management Requirements

In addition to the landscape constraints described above, all treatments under the Proposed Program will utilize the following standard practices known as minimum management requirements (MMRs) that place limitations on how the Program would be implemented:

1. No tractors, trucks, cars, or other machinery will be serviced adjacent to lakes or watercourses, or within wet meadows and other wet areas, or in other areas where such servicing could allow grease, oil, fuel, or other toxic substances to enter lakes, watercourses, or wet areas.
2. Heavy equipment will not operate on soils that are saturated. This means that equipment will not operate when soils are sufficiently wet that heavy equipment operations displace soils in amounts sufficient to cause a visible increase in turbidity to Class I, II, III, or IV waters or turbidity increases which would violate applicable water quality requirements.
3. All state and local air quality regulations and ordinances will be complied with. The local Air Pollution Control District (APCD) or Air Quality Management District (AQMD) will be contacted to determine local requirements.
4. Burning will only occur on Burn Days, as determined by the Air Pollution Control District or Air Quality Management Districts, or on days the local regulating authority has issued a variance or exception for the project.
5. A database search will be conducted for each project by a query of the most reasonably available sources and databases for biological information, including but not limited to, the CNDDB and BIOS. The search shall include a minimum search area of nine (9) USGS Quadrangles surrounding the project area. In cases where the project area extends into multiple quadrangles all adjacent quadrangles shall be included. Surveys may be necessary to determine presence/absence of special-status plants or animals and to determine and evaluate site-specific impacts. The applicant will evaluate the potential direct and indirect impacts caused by the Project. The wildlife agencies shall be notified in writing with the Project scoping information (including the evaluation of direct and indirect impacts and the results of the database search), and asked for comments and recommendations. The lead agency as a result of consultation with the appropriate State or Federal agencies, or a qualified biologist, will modify project design, and/or incorporate mitigation to avoid significant adverse environmental impacts to special status species and other species. If avoidance is not possible, appropriate take permits (Federal Endangered Species Act (ESA) or California ESA) will be required.
6. No new roads (including temporary roads) may be constructed or reconstructed (reconstruction is defined as cutting or filling involving >50 cu. yds/0.25 linear road miles). Existing roads, skid trails, fire lines, fuel breaks, etc. that require reopening or maintenance shall have drainage facilities (see Glossary) applied at the conclusion of the project that are at least equal to those of the California Forest Practice rules.
7. Each project will incorporate measures designed to protect and manage cultural resources, including prehistoric and historic archaeological resources and resources important to maintenance of American Indian traditional cultures. Procedures for protecting cultural resources will follow the most current edition of the CAL FIRE manual, Archaeological Review Procedures for CAL FIRE

Projects (January, 2003, updated November, 2006 and April, 2010). For every VTP project, a preliminary study to determine the potential for cultural resource impacts will be conducted by CAL FIRE/applicant in collaboration with a CAL FIRE archaeologist or his/her designee. Based on recommendations from the preliminary study, further protective measures may be applied, including an on-the-ground cultural resources survey, notification of Native Americans, prefield research, development of protective measures, recording of sites, and completion of an archaeological reconnaissance report. For projects funded with federal dollars, consultation with the State Historic Preservation Office (SHPO) under the requirements of Section 106 is required where significant archaeological or historic resources are identified.

8. When burning in areas with oak or conifer overstory, overstory trees will be protected through use of prescribed fire practices such as ignition and timing techniques and/or protection of leave trees.
9. If treatments in oak woodlands could adversely affect wildlife habitat or species diversity, or lead to a cumulative decline in oak regeneration in the area, then the lead agency will take specific precautions to insure adequate oak regeneration. This could entail measures such as protecting oak seedlings from livestock grazing while regeneration is occurring, or planting oaks if natural regeneration fails within a specific period of time.
10. In shrublands containing native oaks, treatments may incorporate retention of older, acorn-producing oaks to create deer forage. Applicants may be required to plant other vegetation to promote species diversity and improve wildlife habitat, when such practices are not in conflict with program goals.
11. All herbicides used will be applied in accordance with all label requirements and federal, state, and local laws and regulations.
12. All herbicides will be applied in accordance with all applicable court orders, such as the requirement to establish a 60-foot “no spray” buffer (except for tree injection treatments) on each side of all salmon-supporting waters for the herbicides 2,4-D and triclopyr butoxyethyl ester within the range of the California Chinook, Coho and steelhead Evolutionarily Significant Units (ESUs) designated as critical habitat by NOAA Fisheries (formerly National Marine Fisheries Service). (This requirement results from the recent refusal by the U.S. Supreme Court to overturn court order C01-0132C issued by the Western District Court of the US 9th District Court on January 22, 2004. This buffer requirement will remain legally in effect until the U.S. EPA or NOAA Fisheries has evaluated the effect of these herbicides on Salmon ESUs and has complied with one of the “terminating events” in Section VI of the court order).
13. An integrated pest management approach (see Glossary) will be used to design treatment specifications for treating noxious weeds and invasive plants using techniques such as those supported by the California Invasive Plant Council.
14. In order to reduce the spread of invasive plants, only certified weed-free straw and mulch shall be used. If a treatment is slated to take place outside the limits of a road prism, all heavy equipment (bulldozers, skidders, graders, backhoes, dump trucks, etc.) will be cleaned prior to and immediately after treatments are implemented. Livestock used for vegetation treatments will be confined to forage that is free of invasive plants or seeds for at least four days before being introduced into

project areas.

15. When drafting water from waterbodies potentially containing special status fish, reptiles and amphibians (e.g. for standby fire fighting equipment for prescribed fire, for watering roads, etc.) the applicant's operations will conform to the current CA Forest Practice Rules for water drafting, at 14 CCR 916.9, 936.9 and 956.9(r).
16. Herbicide treatments will not be approved nor applied to more than 10% of the VTP acreage statewide that is proposed for treatment within any single fiscal year.
17. No direct ignition of project activity fuels is allowed within the WLPZ.

2.4 Treatable Landscape

Not all of the available landscape can be treated by every one of the proposed treatment types due to the landscape constraints and minimum management requirements noted above, as well as other constraints, such as slope, access, location within and among the bioregions, whether in a WUI or not, etc. On the other hand, not all of the constraints above apply equally to all treatment types, e.g. limitations on heavy equipment may preclude mechanical treatments but hand or prescribed fire treatments may not be limited. As a result, the treatable landscape is generally restricted to low constraint lands (see Appendix A for a description of low constraint and how the acreage figures by treatment type were determined). The number of low constraint acres by treatment type by Bioregion are listed in Table 2.3. Typically these are the acres that would be treated by the Proposed Program. In some cases medium constraint acres might be substituted, since the Proposed Program is based on willing landowner participation.

Table 2.3
Proposed Program Treatable (Low Constraint) Landscape by Bioregion and Treatment Type

Bioregion	Total Available	Prescribed Burn	Manual	Mechanical	Herbicide	Herbivory
	Acres 1/					
Klamath/North Coast	8,158,000	4,048,700	8,158,000	1,011,900	5,322,200	8,158,000
Modoc	3,616,900	2,426,400	3,616,900	2,216,400	2,911,900	3,616,900
Sacramento Valley	1,524,300	381,500	1,524,300	506,800	564,400	1,524,300
Sierra Nevada	6,605,500	1,591,200	6,605,500	1,674,500	4,828,000	6,605,500
Bay Area / Delta	3,346,500	425,600	3,346,500	65,100	663,500	3,346,500
San Joaquin Valley	1,799,800	147,900	1,799,800	572,900	787,600	1,799,800
Central Coast	4,989,200	1,648,500	4,989,200	735,700	2,615,000	4,989,200
Mojave	3,112,800	965,200	3,112,800	2,250,200	2,303,900	3,112,800
South Coast	2,737,600	42,800	2,737,600	97,400	186,200	2,737,600
Colorado Desert	2,067,800	557,000	2,067,800	1,080,700	870,800	2,067,800
	37,958,400	**12,234,800**	**37,958,400**	**10,211,600**	**21,053,500**	**37,958,400**

1/ Acres are the likely maximum number of acres within a bioregion that could be treated by a specific treatment type, e.g. 100% of the Klamath/North Coast bioregion could be treated by hand, while only about 4,048,000 acres could be treated with prescribed fire, as a result, rows are not additive.

2.5 Detailed Description of Treatments

2.5.1 Overview

For this PEIR, vegetation treatment is defined as the planned manipulation of vegetation and/or growing conditions affecting vegetation that has the goal of increasing or enhancing desired products or outputs (water quantity and quality, livestock forage, wildlife habitat, recreation) or protecting the site from destructive agents (wildfire, floods, insects and disease, post fire accelerated erosion, etc.).

Vegetation management activities include the removal, rearrangement, or conversion of vegetation using various treatments. Treatment methods include prescribed fire, mechanical, manual, prescribed herbivory (see Glossary), and herbicide. Vegetation treatments may be applied singly or in any combination needed for a particular vegetation type to meet specific resource management objectives. The method or methods used will be those that are most likely to achieve the desired objectives while protecting natural resource values. The general suite of treatments likely to be initiated under the Proposed Program includes:

- Prescribed fire (underburn, jackpot burn, broadcast burn, pile burn, establishment of control lines)
- Mechanical (chaining, tilling, mowing, roller chopping, masticating, brushraking, skidding and removal, chipping, piling, pile burning)
- Manual (hand pull and grub, thin, prune, hand pile, lop and scatter, hand plant, pile burn)
- Prescribed herbivory (targeted grazing or browsing by cattle, horses, sheep, or goats)
- Herbicides (ground applications only, such as backpack spray, hypohatchet, pellet dispersal, etc.) limited to no more than 10% of annual acres treated (see discussion below in 'Treatment Maintenance' for other caveats)

The Proposed Program would allow herbicide treatments on the landscape, subject to the landscape constraints and minimum management requirements noted above, and would not be limited to treatments funded and regulated by the CFIP Program.

The vegetation treatments described are techniques or methods rather than end results. Prescriptions would incorporate the appropriate vegetation treatment(s) (techniques, methods) described above in order to create specific end results, such as shaded fuel breaks, fuel reduction zones, or improvement of browse or forage for wildlife or domestic stock.

The number and type of vegetation treatments will be selected based on a number of parameters, which may include, but are not limited to:

- Management program or objectives for the site
- Historic and current conditions
- Opportunities to prevent future problems
- Opportunities to conserve desirable vegetation
- Effectiveness and cost of the treatment methods and follow-up maintenance treatments
- Available funding

- Success of past treatments, or treatments conducted under similar conditions
- Recommendations by local experts
- Characteristics of the target plant species, including size, distribution, density, life cycle, and life stage during which the plant(s) is (are) most susceptible to treatment
- Non-target plant species potentially impacted by the treatment
- Fuel configuration (amount, arrangement, and size classes)
- Land use
- Size of the target area
- Topography, slope, and aspect of the treatment area
- Accessibility of the treatment area
- Soil characteristics of the treatment area
- Weather conditions at the time of treatment, particularly wind speed and direction, precipitation prior to or likely to occur during or after application, and time of year
- Proximity of the treatment area to sensitive areas, such as wetlands, streams, or habitat for plant or animal species of concern, rare plants and habitat structure vital to species survival and reproduction, air and water quality, soil productivity and cultural resources
- Potential impacts to humans, fish, and wildlife
- Need for subsequent revegetation
- Maintenance of prior treated area
- Ability/Willingness of landowner to maintain treated area

These parameters would be considered before treatment methods are selected. Before vegetation treatment or ground disturbance occurs, CAL FIRE would consult specialists or databases for sensitive areas within the project area. The project sites would likely have to be surveyed for listed or proposed state or federally threatened or endangered species and rare plants and for evidence of cultural or historic sites.

Initial treatments and follow up maintenance within specific vegetation types would vary depending on the ecological characteristics of the vegetation types, the objective(s) of the treatment, and funding. In general, all vegetation types will require follow up maintenance to meet long-term vegetation management goals. The type of follow up treatment and interval between treatments will depend on site conditions and project objectives. Some project maintenance will be carried out, with funding and under the guidelines of this program, some maintenance will be carried out with private funding outside program guidelines, and some projects will not be maintained at all.

2.5.2 Prescribed Fire Treatments

Prescribed fire is the intentional application of fire to fuels under specified conditions of fuels, weather, and other variables. The intent is for the fire to stay within a predetermined area to achieve site-specific resource management objectives. Prescribed fire may be used to control vegetation, enhance the growth, reproduction, or vigor of certain species, manage fuel loads, and/or maintain vegetation community types that meet multiple-use management objectives. Burning may be used prior to or after other treatments, including herbicide applications to enhance the effectiveness of those treatments.

Factors considered when designing and implementing a prescribed burn include weather conditions, slope and aspect, soil type, vegetation types and density, fuel moisture content, time of year, risks to dwellings and property, alternative treatment methods, and potential impacts on air and water quality, soil stability, land use, cultural resources, and threatened and endangered species.

Prescribed fires can be classified into various types including broadcast burns, underburning and jackpot burning. Broadcast burns are usually done on small to moderately large areas in shrublands to 1) improve browse or forage for wildlife or domestic stock or to 2) create fuel breaks, 3) to control invasive and noxious weeds, or 4) to treat slash in areas cleared of dead and/or live trees. A variation on this technique is to underburn forested areas to reduce surface or ladder fuels in shaded fuel breaks or to manage understory vegetation for wildlife habitat improvement or for production of cultural plants important to Native Americans. “Jackpot” burning is sometimes done where concentrations of surface fuels in forest stands are a fire hazard. This technique involves igniting the concentrations of fuel and limiting the fire to those slash concentrations. Burning of slash piles created by either tractors or by hand is a common method for treating vegetation where there are constraints that limit other types of burning.

Broadcast burning may occur throughout the year; however, it is usually conducted during late spring when the ground is still wet or during fall or winter when precipitation is imminent and after plants have completed their yearly growth cycle and their moisture content has declined. Spring burns are preferred by CAL FIRE staff to ensure a greater measure of public safety. However, there may be impacts to animal and plant reproduction activities. Fall burns are more closely aligned with the natural fire cycle found in California. Some broadcast burning in grasslands may be done in May, after the annual grasses have cured. Piles of vegetation may be burned anytime after the vegetation has dried.

“Cool” burn prescriptions, using techniques such as backfiring, chevron burning, and flank firing, as well as timing the fires during periods of high humidity and high fuel moisture content, would be expected to result in partial removal of understory or groundcover vegetation. The existing groundcover vegetation would be partially retained in a mosaic in forest and shrub communities.

Commonly all prescribed burns will require the construction of control lines using hand or mechanical treatments. In some cases, extensive or mature shrubs must be pretreated by mechanical equipment to remove the aerial component of the vegetation and reduce the probability of an escaped fire when the vegetation is burned. Sometimes shrubs are pretreated with herbicides to kill the aboveground portions and cause them to dry before burning.

Figure 2.3
Prescribed Burn of Chaparral in Southern California

Hand held ignition devices, such as drip torches, propane torches, diesel flame-throwers, and fusees (flares), may be used to start a prescribed fire. Area ignition apparatus include terra-torches and heli-torches. These apparatus release an ignited gelled fuel mixture onto the area to be treated. Helicopters may also be used to drop hollow polystyrene spheres (similar to ping-pong balls) containing potassium permanganate that are injected with ethylene glycol immediately before ignition (Figure 2.3). The sphere ignition method is best used for spot-firing projects.

Prescribed fire may be used in some situations where other treatment methods are not feasible due to rocky soils, steep slopes, or irregular terrain, although prescribed fire is limited to situations where sufficient fuel is available and arranged properly to carry the fire. It is also generally less expensive to treat vegetation using fire ($20 to $500 per acre for grasslands, woodlands and shrublands, with higher costs associated with treating forest types). However, project planning and pre-treatment activities often increase costs dramatically.

The use of prescribed fire comes with a risk of the fire burning out of control and damaging property and public improvements, endangering human life, and creating hazards from smoke. Timing of prescribed burns is dependent on specific weather conditions that are described in the burn plan prepared for the project. These weather conditions can often be difficult to meet. Thus alternative treatments, including chemical, prescribed herbivory, mechanical and manual, are often used to control vegetation near communities. In some situations, prescribed fire can encourage the establishment of invasive and noxious plants if the treatment site is not treated with herbicides or revegetated with desired plants following the fire.

Figure 2.4
Examples of Prescribed Burning to Create Fuel Break

A prescribed burn requires a burn plan that includes a map(s) with the project boundaries, describes the location and objectives of the project, a prescription describing the required weather conditions, fuel moisture, and soil and duff moisture, desired fire behavior, a public information plan, and a smoke management plan. The smoke management plan identifies the affected Air Pollution Control District or Air Quality Management Districts, smoke-sensitive areas, wind direction, venting elevation, and visibility factors required to disperse the smoke. The smoke management plan is designed to minimize public exposure to air pollutants generated by prescribed burns. Burning must adhere to local and state regulations and laws. The local Air Resources Control District will be consulted for special requirements for prescribed fires.

2.5.3 Mechanical Treatments

Mechanical treatments involve the use of motorized equipment, such as wheeled tractors, crawler-type tractors, or specially designed vehicles with attached implements designed to cut, uproot, crush/compact, or chop existing vegetation. The selection of a particular mechanical treatment and equipment is based upon a number of factors, such as characteristics of the vegetation, seedbed preparation and revegetation needs, topography and terrain, soil characteristics, climatic conditions, and a comparison of the improvement cost to the expected increase in productivity or public and/or private benefit. Mechanical methods that may be used include chaining, root plowing, tilling and drill seeding, mowing, masticating, roller chopping and cutting, blading, grubbing, feller-bunching, and harvester-forwarder-processing. In addition, these mechanical treatments often require that the manipulated vegetation be burned. As new technologies and techniques are developed, they may be used if their impacts are similar to or less than those discussed below.

Mechanical treatments are effective for removing dense stands of vegetation. Some mechanical equipment can masticate (mulch) or lop and scatter vegetative debris concurrently with vegetation removal. Mechanical methods are appropriate where a high level of control over vegetation removal is needed, such as in sensitive wildlife habitats or near home sites or communities, and are often used instead of prescribed fire or herbicide treatments for vegetation control in the Wildland Urban Interface (WUI). Unless used with follow-up herbicide treatments, mechanical treatments have limited use for noxious weed control, as the machinery tends to spread seeds and may not kill roots.

Mechanical vegetation control costs from $800 to $1200 per acre for equipment, fuel, and labor. Repeated mechanical treatments are often necessary, as residual weed or shrub seed in the soil or resprouting of shrubs may revegetate treated areas with undesired plants.

Mechanical treatments are generally conducted when soils are not saturated with water to prevent soil compaction, excessive damage to dirt roads, or increased erosion and sedimentation into streams. In general, most mechanical treatments occur in late spring, summer, or fall (May 1 to November 15). These treatments are frequently used to install control lines for prescribed burns, to pretreat vegetation for subsequent burning, or as a stand-alone treatment. Disking may be used to uproot herbaceous vegetation and is usually done in late spring or early summer after the grasses and herbaceous vegetation have cured. Bulldozers can crush or uproot shrubs with a straight blade or brushrake. Rotary head cutters on articulated booms are effective at cutting shrubs and trees less than 10 inches in diameter at breast height (4½ feet above the ground).

Chaining consists of pulling heavy (40 to 90 pounds per link) chains in a “U” or “J” shaped pattern behind two crawler-type tractors, or by one tractor pulling a chain with a heavy ball attached to the end (Figure 2.5). The chain is usually 250 to 300 feet long and may weigh as much as 32,000 pounds. The width of each swath varies from 75-120 feet. Chain link size, modifications to links, and operation of the crawler tractors determine the number and size of trees and shrubs that are removed and the effects on understory species and soil disturbance. Chaining can be conducted during the appropriate season to benefit soil stability and plant seeding, and to reduce the invasion of weeds.

Chaining is most effective for crushing brittle shrubs, such as manzanita and chamise, and uprooting woody plants. Chaining can be done on irregular, moderately rocky terrain, with slopes of up to 50%. Although chaining may cause soil disturbance, the resultant plant debris can be left in place to minimize surface erosion, shade the ground surface, maintain soil moisture and provide nutrient recycling. Alternatively, the debris can be burned to facilitate grass seeding, improve aesthetic values, and eliminate potential rodent habitat. Chaining is a cost effective means to incorporate grass seed into soil, especially in burned areas, as it provides a variety of seeding depths and microsites, which can improve ground cover and forage production.

Tilling involves the use of angled disks (disk tilling) or pointed metal-toothed implements (chisel plowing) to uproot, chop, and mulch vegetation. This technique is best used in situations where complete removal of vegetation or thinning is desired, and in conjunction with seeding operations. Tilling leaves mulched vegetation near the soil surface, which encourages the growth of newly planted seeds. Tilling is usually done with a brushland plow, a single axle with an arrangement of angle disks that covers about 10-foot swaths. Sometimes a crawler-type tractor or a large rubber-tired tractor pulls an offset disk plow, which consists of multiple rows of disks set at different angles to each other. This method is often used for removal of sagebrush and similar shrubs and works best on areas with smooth terrain and deep, rock-free soils. Chisel plowing can be used to break up compacted soils, such as hardpan.

Figure 2.5
Chain Behind Bulldozer

Drill seeding and drilling is often done in conjunction with tilling. The seed drills, which consist of a series of furrow openers, seed metering devices, seed hoppers, and seed covering devices, are either towed by or mounted on a tractor. The seed drill opens a furrow in the seedbed, deposits a measured amount of seed into the furrow, and closes the furrow to cover the seed. Seed may also be injected into the soil directly through direct "drilling" without creating furrows.

Mowing tools, such as rotary mowers on wheeled tractors or other equipment, or straight-edged cutter bar mowers, can be used to cut herbaceous and woody vegetation above the ground. Mowing is often done along highway right-of-ways to reduce fire hazards, improve visibility, prevent snow buildup, or improve the appearance of the area. Mowing is also used in sagebrush habitats to create a mosaic of uneven-aged stands and enhance wildlife habitat. Mowing is most effective on annual and biennial plants. Mowing rarely kills weeds, so an area may have to be mowed repeatedly for the treatment to be effective. However, the use of a "wet blade," in which an herbicide flows along the mower blade and is applied directly to the cut surface of the treated plant, has greatly improved the control of some species. In addition, chipping equipment can be used to cut and chip vegetation.

Roller chopping tools are heavy bladed drums that cut and crush vegetation up to five inches in diameter with a rolling action. Crawler-type tractors, farm tractors, or a special type of self-propelled vehicle designed for forested areas or range improvement projects pull the drums. During blading, a crawler type tractor blade shears small shrubs at ground level. The topsoil could be scraped with the shrubs and piled into windrows during this operation, although blading is generally limited to areas where degradation to the soil is acceptable, such as along right-of-ways or in borrow ditches.

Masticating equipment installed on small wheeled tractors, wheeled or crawler-type tractors, excavators, or other specialized vehicles, is used to cut shrubs and trees into small pieces that are scattered across the ground, where they act as mulch (Figure 2.6). Shrubs and sapling-size trees are

typically masticated with small-wheeled tractors and crawler-type tractors, while excavators are often used when larger trees are removed. Small-wheeled tractors generally operate on slopes less than 20% while excavators and tractors can operate on slopes up to 45%.

Figure 2.6
Mastication

Grubbing is done with a crawler-type tractor and a brush or root rake attachment. The rake attachment consists of a standard dozer blade adapted with a row of curved teeth projecting forward at the base of the blade. Shrubs are uprooted and roots are combed from the soil by placing the base of the blade below the soil surface. Grubbing significantly disturbs surface soil horizons and perennial grasses and forbs; so grubbed areas are usually reseeded with desired species to prevent extensive runoff and erosion. Runoff and erosion on steeper slopes and/or more erosive soils can be greatly reduced by pushing shrubs into windrows on contours across the slope. These windrows can be burned, or left in place to become wildlife habitat as they gradually decompose through natural processes.

Removal of trees from commercial or precommercial thinning or partial cutting for fuel hazard reduction projects, shaded fuel breaks, and wildlife habitat improvement projects are done with a variety of equipment. Feller-bunchers and harvester-forwarder-processors are used primarily east and northeast of the Central Valley, on slopes of less than 35%, and for handling trees that are between 4-22 inches in diameter. Feller-bunchers clamp the trunks of trees, cut them at the base, pick them up, and bundle them into piles or load them onto trucks. Rubber-tired skidders or crawler tractors equipped with grapples skid the piles to landings, where they are processed. Harvesters cut trees and remove the limbs and cut logs to length, at which point the forwarder moves them to landings. A variety of cable yarders pull logs or whole trees to landings, where they are processed and loaded on trucks. Large chippers or “tub-grinders” are often used to chip the tops and limbs to generate mulch or biomass, which can be used onsite, sold to homeowners or garden supply stores, or used in power generation facilities.

It is anticipated that some material generated by the Proposed Program might be removed to a biomass plant concurrent with Program operation. Because the cost to remove such fuel is high, it is anticipated that no more than 10% of mechanical treatments might generate biomass, and only then when the material is chipped on site and only when the projects are near an existing biomass plant.

Also, several bioregions have few to no biomass plants including the Mojave, Colorado Desert, South Coast and Bay Area Delta, such that little if any biomass produced from mechanical treatments is expected to be removed from the project site. Removal of material for commercial purposes will require an additional CEQA review, most likely through filing a timber harvest plan, or filing for one of several exemptions available to landowners under the Forest Practice Rules.

2.5.4 Manual Treatments

Manual treatment involves the use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous and woody species. Treatments include 1) thinning trees, 2) cutting undesired plants above the ground level, 3) pulling, grubbing, or digging out root systems of undesired plants to prevent sprouting and regrowth, 4) cutting at the ground level or removing competing plants around desired species, or 5) placing mulch around desired vegetation to limit competitive growth. Slash created by manual treatments is typically treated by 1) lopping to a specified maximum length and scattering to within a specified distance from the ground to facilitate decomposition and reduce flame lengths in the event of a fire, 2) piling by hand and burning during wet periods of the year, 3) piling and leaving piles unburned for wildlife habitat, 4) chipping, with the chips blown onto the ground or into piles for later removal, 5) cutting tree trunks into lengths for firewood gatherers, and/or 6) removing tree trunks by hand for utilization.

Hand tools used in manual treatments include the handsaw, axe, shovel, rake, machete, grubbing hoe, mattock (combination of cutting edge and grubbing hoe), pulaski (combination of axe and grubbing hoe), brush hook, hand pruners, and pole pruning saws. Power tools, such as chain saws, power brush saws, and power pruning saws, are also used, particularly for thick-stemmed plants and thick limbs.

Manual treatments, such as hand pulling and hoeing, are most effective where weed infestations are limited and soil types allow for complete removal of plant material (Figure 2.7). Pulling works well for annual and biennial plants, shallow-rooted plant species that do not resprout from residual roots, and plants growing in sandy or gravelly soils. Repeated treatments are often necessary due to soil disturbance and residual weed seeds in the soil.

Figure 2.7
Hand Fuel Break

Manual techniques can be used in many areas and usually with minimal environmental impacts. Although they may have limited value for weed control over a large area, manual techniques are highly selective. Manual treatment is effectively used in sensitive habitats, such as riparian areas and wet areas and areas where burning or herbicide application would not be appropriate, to install control lines for prescribed burns where mechanical equipment cannot be used, around structures, and in areas that are inaccessible to vehicles.

Manual treatments are expensive and labor intensive compared to other vegetation management methods, such as prescribed burning and herbicide application. Typical manual vegetation control costs have ranged from $70 to $1200 per acre (Metz, pers. comm., 2006) to upwards of $2,200/acre in the Logtown (El Dorado County) community assistance grant. Manual methods may also be more dangerous for the workers involved in implementation when sharp or power tools are used under difficult working conditions (e.g. steep terrain with slippery ground cover, plants, such as poison oak, that contain potentially toxic or hazardous compounds). While manual techniques may not be efficient or cost effective over large acreages, they may be useful for highlighting specific invasive species problems and for educating public land users. Manual methods may also be cost effective for small-scale projects where heavy equipment move in/out costs are prohibitive.

2.5.5 Prescribed Herbivory Treatments

Prescribed herbivory treatments involve the intentional use of domestic livestock. Prescribed herbivory treatments are used to reduce the targeted plant population to an acceptable level by stressing target plants and reducing competition with the desired plant species.

Domestic livestock, such as cattle, horses, sheep, or goats, control the top-growth of certain non-native invasive and noxious weeds, which can help to weaken the plants and reduce the reproduction potential (Figure 2.8). The animals benefit by using the weeds as a food source and can, after a brief

adjustment period, consume 50% or more of their daily diet of the weed, depending on the animal and plant species.

Cattle and horses primarily eat grass, and occasionally cattle also eat some shrubs and forbs. Sheep consume many forbs, as well as grasses and shrubs, but tend not to graze an area uniformly. Goats typically eat large quantities of woody vegetation as well as forbs and tend to eat a greater variety of plants than sheep. Goats and sheep are effective control agents for leafy spurge, Russian knapweed, toadflax, other weed species, and some types of shrubs.

Figure 2.8
Goats Maintaining Fuel Break

A successful treatment program can enhance habitat for wildlife. For example, cattle, horses, and sheep feeding in the spring and early summer can thin understory forbs and grasses, reducing competition for light, nutrients, and water for desirable shrub species. The shrub species will then increase their vegetative output for winter browsing by deer and other wildlife.

In order for this treatment to be effective, the right combination of animals, stocking rates, timing, and rest must be used. Prescribed herbivory by domestic animals should occur when the target species is (are) palatable and when feeding on the plants can damage them or reduce viable seeds. Additionally, prescribed herbivory should be restricted during critical growth stages of desirable competing species. When desirable species are present, there needs to be adequate rest following the treatment to allow the desirable species to recover.

Whenever the use of livestock to control undesirable vegetation is being considered, the needs of the domestic animals as well as the other multiple use objectives for the area must be considered. A herder, fencing, mineral block, and/or a watering site may be required to keep the animals within the desired area. Many weed species are less palatable than desired vegetation, so the animals may overgraze desired vegetation rather than the weeds. Additionally, some weeds may be toxic to certain livestock and not to others, which will influence the management option selected. Proper management of the domestic animals is extremely important if this method of treatment is to be successful.

Caution should be used whenever prescribed herbivory or any other vegetation control is prescribed near riparian areas and wet areas, in steep topography, or in areas with highly erodible soils. Weed seeds may still be viable after passing through the digestive tract of animals, so the animals should not be moved to weed-free areas until ample time has passed for all seeds to pass through their systems. Seeds can also travel on the wool or hair of domestic stock. Typical prescribed herbivory costs range from $500 to $1200 per acre.

2.5.6 Herbicide Treatments

Herbicides are chemicals that damage or kill plants. Herbicides can be classified by their mode of action and include growth regulators, amino acid inhibitors, grass meristem destroyers, cell membrane destroyers, root and shoot inhibitors, and amino acid derivatives, all of which interfere with plant metabolism in a variety of ways.

Herbicides can also be categorized as selective or non-selective. Selective herbicides kill only a specific type of plant, such as broad-leaved plants. Some herbicides used for noxious weed control are selective for broad-leaved plants, so that they can be used to control weeds while maintaining grass species. Other herbicides, such as glyphosate (Roundup®) are non-selective, so must be used carefully around non-target plants. Typical herbicides likely to be applied include, but are not limited to:

- 2,4-D (Dimethylamine Salt, & 2-Ethylhexyl Ester)
- Glyphosate (Isopropylamine Salt, Potassium Salt, & Diammonium Salt)
- Hexazinone
- Imazapyr (Isopropylamine Salt)
- Triclopyr (Butoxyethyl Ester & Triethylamine Salt)
- Clopyralid (Monoethanolamine Salt)
- Sulfometuron Methyl
- Borax (Sporax)
- NP9E (a commonly used surfactant)

Herbicide treatments legally must comply with the U.S. Environmental Protection Agency (EPA) label directions as well as California Environmental Protection Agency, Department of Pesticide Regulation (DPR) label standards. Several herbicide application methods are available. The application method chosen depends upon an Integrated Pest Management (IPM) analysis, which includes an analysis of the 1) treatment objective (removal or reduction), 2) accessibility, topography, and size of the treatment area, 3) characteristics of the target species and the desired vegetation cover, 4) location of sensitive areas and potential environmental impacts in the immediate vicinity, 5) anticipated costs and equipment limitations, 6) meteorological, vegetative, and soil conditions of the treatment area at the time of treatment, and 7) proximity of human habitation.

Herbicide recommendations are developed and updated for each herbicide project, generally by a licensed pest control adviser. The plan includes project specifications, key personnel responsibilities, communication procedures, safety, spill response, and emergency procedures. The plan also specifies

minimum buffer widths between treatment areas and water bodies when using herbicides not approved for aquatic use.

Procedure For Considering New Chemical Products

New chemical products and formulations are likely to become available to land managers in the future. Use of one or more of these products may be deemed more desirable for particular vegetation treatment goals than currently available chemicals. New products may be more efficacious at lower application rates or lower active ingredient (a.i.) rates; less toxic or mobile, have fewer non-target effects, be cheaper, etc. The following is a brief summary of the protocol that will be used to evaluate new products for use.

New chemicals would first have to be registered for the anticipated use under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) by the U.S. EPA. This registration would be backed by toxicological, environmental fate, and ecotoxicity data submitted by the pesticide manufacturer and reviewed by the U.S. EPA. Re-registration by the U.S. EPA of active ingredients and products "that were originally registered before current scientific and regulatory standards were formally established" is also required to evaluate any new information and modify registrations, labels and tolerances, as necessary. (EXTOXNET, "Pesticide Regulation", 2001). This data is used to assess the potential human health and ecological risks from use of the chemicals.

Before new products are registered for use in California, they would have to be registered by the CDPR, which could add further label restrictions.

The potential use of new herbicides or fungicides in the VTP would require a review to ensure compliance with CEQA. The process would include a review of relevant documents, CEQA (VTP PEIR and other state agency Programmatic EIRs) and NEPA (USFS, BLM, USFWS and other federal agency EAs or Programmatic EISs), to determine whether any have fully covered the use of the proposed new chemical(s). The review will determine the potential human health and ecological risks of the new chemical's use, by addressing the following criteria:

- Identification of potential use patterns, including target plants, formulation, application methods, locations to be treated, application rate, and anticipated frequency of use.
- Review of chemical hazards relevant to the human health risk assessment, including systemic and reproductive effects, skin and eye irritation, allergic hypersensitivity, carcinogenicity, dermal absorption, eurotoxicity, immunotoxicity, and endocrine disruption.
- Estimation of exposure to workers applying the chemical or reentering a treated area.
- Environmental fate and transport, including drift, leaching to groundwater, and runoff to surface streams and ponds.
- Estimation of exposure to members of the public.
- Review of available ecotoxicity data, including hazards to mammals, birds, reptiles, amphibians, fish, and aquatic invertebrates.
- Estimation of exposure to terrestrial and aquatic wildlife species.

- Characterization of risk to human health and wildlife.

Herbicide application schedules are designed to minimize potential impacts to non-target plants and animals, while remaining consistent with the objective of the Proposed Program. The application rates depend upon the target species, the presence and condition of non-target vegetation, weather and site conditions, soil type, depth to the water table, presence of other water sources, the label requirements, approved DPR rates, and sensitivity of non-target species.

Herbicides will only be applied on the ground from equipment on vehicles (including all terrain vehicles and tractors) or by manual application devices (Figure 2.9). Herbicides may be applied to green leaves with a backpack applicator or spray bottle, wick (wiped on), or wand (sprayed on) or applied as pellets to the ground surface. Herbicides can also be applied to trees around the circumference of the trunk on the intact bark (basal bark), to cuts in the trunk or stem (frill, or "hack and squirt"), to cut stems and stumps (cut stump), or injected into the inner bark.

Figure 2.9
Ground Application of Herbicides

No aerial applications will be approved or funded under the Proposed Program.

Herbicides can be used selectively to control specific types of vegetation or non-selectively to clear all vegetation on a particular area. Herbicides can be applied over large areas and in remote locations, or applied using spot applications in environmentally sensitive areas. The cost of herbicide application generally ranges from $20 to $250 per acre.

There are several drawbacks and limitations to herbicide use. Herbicides can damage or kill non-target plants. Weeds may develop a resistance to a particular herbicide over time. Herbicides or their adjuvants at sufficient dosages can be toxic or cause health problems in humans, animals, birds, amphibians, reptiles, insects, and fish. Many of these limitations are offset by requirements that apply to application methodology, regulatory requirements (e.g. requirement to have a licensed Pest Control Advisor (PCA) involved in the project, etc.) label restrictions, and project specific guidelines.

Restricted use herbicides must be applied according to written recommendations from a licensed PCA according to the label and by an herbicide applicator certified by the DPR. Permits to apply restricted herbicides are issued by County Agricultural Commissioners (CACs). Since permits are the functional equivalent of CEQA, they must be site and time specific. Site specificity is achieved by a clear

description of the site when the permit is issued. Since permits are issued for a 12- or 24-month period, time-specificity is achieved by having the permittee file a "notice of intent" (NOI) to apply the herbicide at least 24 hours before the scheduled application. The notice must describe the site to be treated and the herbicides to be applied. It must also contain information on any changes in the environmental setting (for example, construction of residences or schools or changes in vegetation cover types that may have occurred since the permit was issued). This notice allows the CAC an additional opportunity to review the planned application and apply additional restrictions if needed.

County Agricultural Commissioners may also issue multi-year permits for perennial agricultural plantings (such as fruit trees or grapevines), non-production agricultural sites, and non-agricultural sites. However, the permittee must immediately notify the CAC of any changes in the information on the permit (ex. a change in the kind of crops planted, or a newly constructed labor camp or home nearby). County staff review notices of intent and can halt the proposed application if conditions warrant. County staff makes pre-application inspections on at least five percent of the use sites identified by permits or notices of intent. These are primarily spot checks to ensure that information contained on the permit is accurate.

2.5.7 Treatment Maintenance

Most treatments require maintenance, usually within three to twenty-five years after the original treatment (Bureau of Land Management, 2005). In general, shrub vegetation types would be treated on 7-15 year rotation, or occasionally on rotations as long as 20- to 25-years, which would allow enough time for dead material to collect in order to sustain a prescribed fire. Treatments in conifer vegetation types might initially involve mechanical or hand treatment to reduce surface and ladder fuels. Following the initial treatment, prescribed fire could be used at 5- to 10-year intervals to maintain low fuel hazards. Maintenance treatment intervals are generally related to the vegetation life form, landscape location (e.g. climate and soil types influence plant regrowth) and to treatment type. For analysis purposes, and given no other significant site disturbance such as wildfire, maintenance is assumed to occur at the following time intervals:

- Grasslands – 2-5 years after previous treatment
- Shrublands – 5-10 years after previous treatment
- Forestland – 10-15 years after previous treatment

Research by Finney (Finney, 2001; Finney & McHugh, 2005) indicates that not all acres need to be treated in order to achieve changes in wildland fire behavior. In addition, because the VTP is based on willing landowner participation, not every acre initially treated will receive a maintenance treatment. For analysis purposes, the Proposed Program treats 35% of all originally treated lands with a follow-up maintenance treatment. Generally only 12% (e.g. 35% times 35%) of originally treated lands receive a second maintenance treatment, and only 4% of the originally treated lands receive a third treatment

Often the maintenance treatment is different than the original treatment, such as a prescribed burn followed by herbicide application(s) to control shrub regrowth, or hand treatment using chainsaws to create shaded fuel breaks along public roads followed by periodic under burning to keep sprouting and fuel loads low. Maintenance treatments can often be conducted with fewer adverse environmental effects than the original treatment. Initial treatments are not likely to include many

herbicide treatments, however many of the maintenance treatments (up to the 10% yearly cap noted in MMR 16) are expected to utilize herbicides.

While no aerial application of herbicides is permitted in the Proposed Program, landowners can implement aerial application of herbicides as a maintenance treatment outside of the program. As noted above, landowners are not allowed to apply for funding for initial or maintenance treatments using aerial application of herbicides. However, ground applied herbicide treatments can be funded.

2.5.8 Treatment Combinations

Although the aforementioned treatment types are described individually, they are typically implemented in combination. For example, the average prescribed burn of 260 acres requires up to 2.5 miles of fireline, which can result in as many as 11 of the 260 acres being cleared by heavy equipment for use as control lines. Handwork, to create the 100 feet of defensible space around dwellings required by PRC 4291, is often accompanied by slash pile burning the winter after treatment. For analysis purposes, projects that require multiple treatments, whether in the same year or in a following year, will have each treatment accounted for separately as part of the Proposed Program treatment goal of 216,910 acres. Thus, a prescribed fire might require burning 260 acres and conducting 11 acres of mechanical treatment, which for the purpose of analyzing the environmental effects of treatments in this EIR is treated as 271 acres, even though the project acreage documented in CAL FIRE accomplishment reports would only be 260 acres.

2.5.9 Distribution and Location of Area Treated Annually

Between 1,000,000 and 2,500,000 acres of treatments would be applied across the landscape in any 10-year period, with approximately 216,910 acres treated per year. The distribution of treatments by treatment type is based on trends from the past five years, as well as CAL FIRE policy: Based on recent trends, average project size is expected to be around 260 acres (BBWA, 2006).

- 53% of all treatments are expected to use prescribed fire
- 10% are expected to use hand treatments
- 18% are expected to use mechanical treatments
- 9% are expected to use herbicide treatments
- 10% are expected to use prescribed herbivory

The spatial location of the treatments implemented by the Proposed Program is likely to follow the pattern of the past five years, as treatments continue to be initiated by willing landowners responding to the various CAL FIRE programs that provide funding. Based on trends from past accomplishments (CAL FIRE, 2006), the Proposed Program would treat approximately the following acreages over a ten-year period by bioregion (Table 2.4).

Table 2.4
Proposed Program Treatment Acreage by Bioregion 1/

Bioregion	Total Landscape Acres in Bioregion	Distribution of Treatments	Acreage Proposed for Treatment First 10 Years	Approximate Annual Acreage Treated
North Coast/Klamath	8,158,000	11.7%	253,500	25,350
Modoc	3,616,900	10.3%	223,200	22,320
Sacramento Valley	1,524,300	14.4%	312,000	31,200
Sierra	6,605,500	19.8%	429,100	42,910
Bay Area	3,346,500	7.2%	156,000	15,600
San Joaquin	1,799,800	5.4%	117,100	11,710
Central Coast	4,989,200	17.5%	380,000	38,000
Mojave	3,112,800	0.9%	20,000	2,000
South Coast	2,737,600	9.5%	205,600	20,560
Colorado Desert	2,067,800	3.3%	72,600	7,260
Total	**37,958,400**	**100.0%**	**2,169,100**	**216,910**

1/ Treatment effects are based on ~ 53% of treatments using prescribed fire, ~18% use mechanical treatments, ~ 10% use hand treatments, ~9% use herbicides and ~ 10% use prescribed herbivory.

Although an annual number of acres are shown, it should not be considered as an upper limit to the number of acres that might be treated in a particular year. Rather the annual acreage figure is shown because some resource effects are analyzed over a 1-year period (e.g. prescribed fire, smoke and air quality) while others are analyzed over a longer time frame (treatment effects on soil, water quality, etc.) If the acreage treated within any bioregion exceeds 110% of the yearly amounts above, then additional analysis will be required at the project level to assess whether there are significant effects.

Using the average treatment size of 260 acres, the number of areas identified as spatially specific “projects” that might be implemented over a ten year period as a result of the Proposed Program, by treatment type and by bioregion, is shown in Table 2.5.

Table 2.5
Number of VTP Projects per 10 Year Period by Bioregion and Treatment Type

	Number of Projects Over 10 Years					
Bioregion	**Total**	**Prescribed Fire**	**Mechanical**	**Hand**	**Herbicides**	**Herbivory**
North Coast/Klamath	975	516	175	96	88	100
Modoc	858	455	155	86	77	86
Sacramento Valley	1,200	635	215	118	108	123
Sierra	1,650	874	296	163	148	169
Bay Area	600	318	108	59	54	62
San Joaquin	450	238	81	45	40	46
Central Coast	1,462	794	269	148	135	115
Mojave	77	41	14	8	7	8
South Coast	791	419	142	79	71	79
Colorado Desert	279	159	54	30	27	10
Total	**8,343**	**4,450**	**1,510**	**830**	**750**	**800**

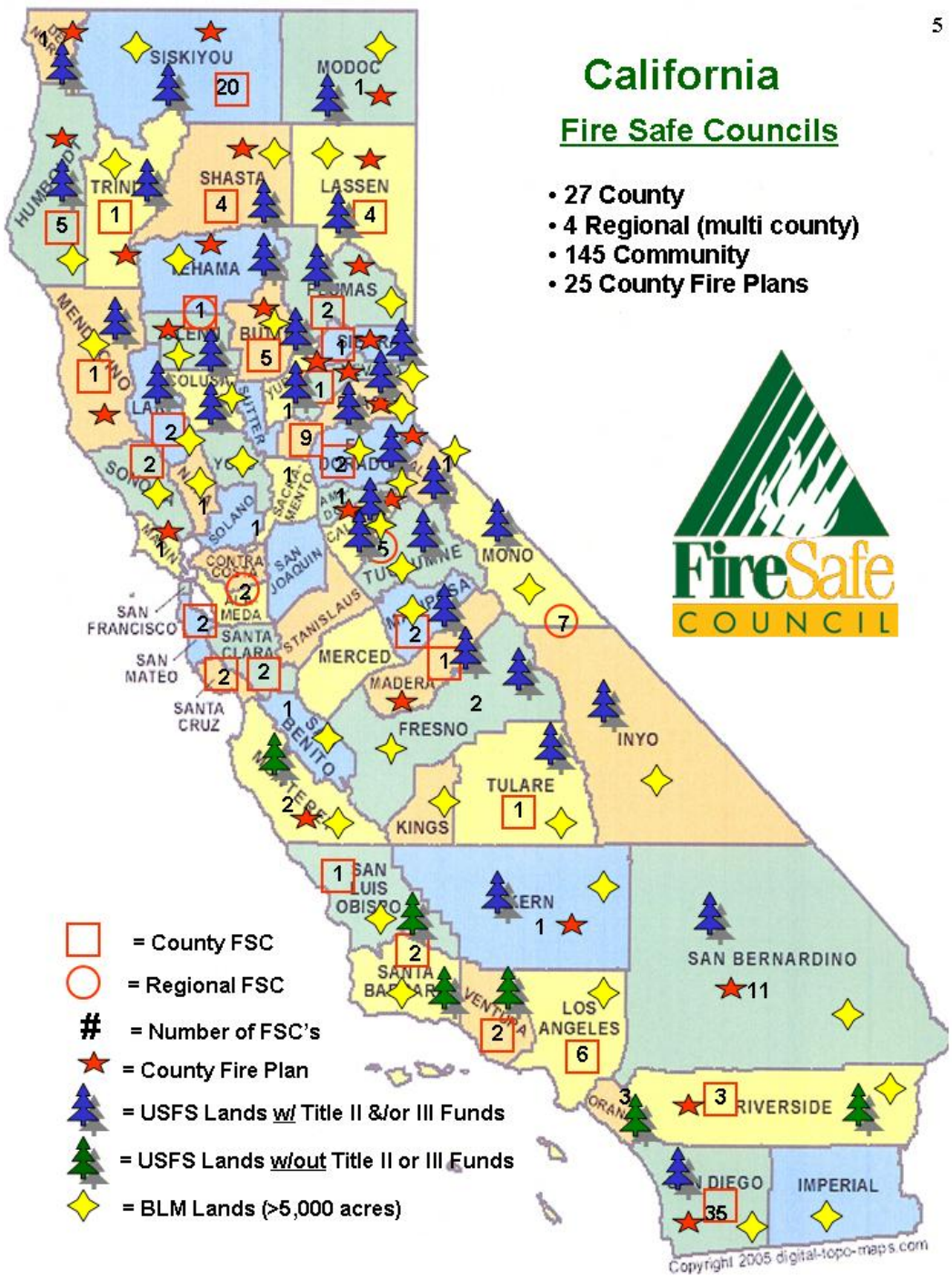
2.6 How the Proposed Program Would be Implemented

The VTP is a voluntary program that will focus on the use of prescribed fire, mechanical treatments, and a variety of other means for treating vegetation on SRA and LRA lands and federal Direct Protection Areas (DPAs).

Under the VTP, private landowners, public agencies (such as Resource Conservation Districts) and non-profit groups enter into a contract or agreement with CAL FIRE to use identified treatments to accomplish a combination of fire protection and resource management goals authorized under this VTP. Such projects are regulated through the specific requirements under one or more of the programs mentioned in Section 1.4. Implementation of VTP projects is through local CAL FIRE Units. The projects that fit within a unit's priority areas (e.g., those identified through the Unit Fire Plan) and are considered to be of most value to the unit are those that will be completed.

In many cases, projects would be implemented through agreements between CAL FIRE and county and community Fire Safe Councils. Fire Safe Councils are non-profit organizations composed of individuals, public and private agencies and companies that share a common, vested interest in preventing and reducing losses from wildfire. There are over 150 county and community Fire Safe Councils throughout the state and they are annually implementing hundreds of fuel reduction/fire protection projects that cover thousands of acres of non-industrial private property. Figure 2.10 shows the location and extent of coverage of fire safe councils.

Figure 2.10



Source: California Fire Safe Council

Projects conducted under the auspices of the VTP will be evaluated using an environmental checklist (Chapter 8) to determine whether the environmental effects of the projects were addressed in the PEIR. The environmental checklist includes the potential impacts and mitigation measures described in the PEIR. No additional CEQA documentation will be required if the subsequent project is within the scope of the program and if the environmental effects have been evaluated in the PEIR. However, other permits may be required for implementation.

If the checklist reveals that the proposed project may result in one or more significant impacts not addressed in the PEIR, the following actions may be taken:

- The project may be changed to avoid the potential impact;
- The project may be cancelled; or
- Additional CEQA analysis, in the form of a negative declaration or EIR, may be conducted to identify the impacts and feasible mitigation.

Guidelines for the development of, and participation in, VTP projects will be similar to those used for the existing VMP and CFIP. CAL FIRE may share the costs of the project, accept liability in the case of an escaped fire, and suppress escaped fires. CAL FIRE, acting on behalf of private landowners, the California Department of Parks and Recreation, DFG and a variety of regional and local agencies, such as Resource Conservation Districts, local fire protection agencies, or fire safe councils, may initiate VTP projects. Participants must be willing to:

- Enter into a contract with CAL FIRE to implement the project;
- Assume and guarantee payment of a proportionate share of the project in cases where cost share is required by CAL FIRE programs; and
- Develop or direct completion of a treatment plan.

Assistance for project funding will be dependent on the availability of funds and consistency with the objectives of the VTP. CAL FIRE will also evaluate the relationship between public and private benefits to determine the basis for the cost-sharing agreement. Projects that would benefit only private landowners will receive the least assistance, while projects that emphasize public benefits will receive the most assistance. For instance, CAL FIRE would not fund that portion of a fuel reduction project that is required by regulation (e.g. PRC 4291 to provide defensible space around dwellings) and which would not provide protection to a community or high-value resources. Conversely, CAL FIRE would provide a larger proportion of the funding for projects that benefit the public, such as reducing fuel hazard to protect communities and high-value resources or that CAL FIRE has designated as high priority in Unit Plans.

In conifer forests the VTP would likely authorize prescribed fire, handwork and mechanical treatments. Title 14, California Code of Regulations (CCR) (the forest practice rules or FPRs) regulates the removal of commercial forest products. The VTP does not include projects that would cut or remove timber or other solid wood products from timberlands for commercial purposes (as defined by Public Resources Code 4527) and would require a timber harvesting plan (THP), non-industrial timber management plan (NTMP), or program timberland EIR (PTEIR). The VTP may fund or provide environmental clearance for projects that are already exempt under CCR

Section 1038 however any profit realized from the sale of commercial products must be used to offset project costs, which may result in a net zero profit for the landowner.

2.7 Known Areas of Controversy

Section 15123(b) of the State CEQA Guidelines requires that an EIR identify areas of controversy known to the lead agency, including issues raised by agencies and the public. Several effects of implementing the Proposed Program are expected to be controversial, including the following:

- Impacts to air quality in certain air basins due to smoke from prescribed fire treatments
- Potential impacts to water quality, biological resources and human health from application of herbicides as a prescribed treatment funded under the Proposed Program
- Potential impacts to water quality, biological resources and human health from application of herbicides not prescribed or funded under the Proposed Program, as a before or after treatment
- Potential unintended effects of the application of herbicides
- Potential spread of invasive plants due to treatments
- Potential for loss of life, property and resource values due to escaped prescribed fire

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Chapter 3 Alternatives

3.1 Overview of Alternatives

In accordance with Section 15126 of the CEQA Guidelines, a draft EIR must analyze a range of reasonable alternatives to the proposed project that could feasibly attain the objectives of the project. The CEQA Guidelines provide the following direction for analysis of the alternatives.

- Describe a range of reasonable and feasible alternatives to the project, or to the location of the project.
- Evaluate the comparative merits of the alternatives.
- If there is a specific proposed project, explain why other alternatives were rejected in favor of the proposal.
- Focus on alternatives capable of avoiding or substantially lessening significant adverse environmental effects or reducing them to a level of less than significant, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.
- If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.

As a result of these requirements, the following alternatives have been developed. Each is summarized below and described in more detail following the description of the landscape constraints and minimum management requirements that apply to each of the alternatives.

- Alternative 1 – Status Quo. This alternative represents the "No Project" alternative required by CEQA. If CAL FIRE took no further action, existing vegetation treatment programs, such as the VMP and CFIP, would continue to operate using previously approved EIRs and departmental procedures. The guidance documents for each of the CAL FIRE programs would apply to an existing landscape that is somewhat smaller than the Proposed Program or Alternatives 2. The enabling legislation (SB 1704) for the Status Quo Alternative contains a more restrictive description of the lands that can be treated than subsequent legislation (SB 1084) that authorizes the proposed Vegetation Treatment Program.

- Alternative 2 – No Herbicide Treatments. In this alternative no herbicides would be prescriptively applied and procedures would be put into place that would preclude the department from funding vegetation treatment projects where the project applicant had applied herbicides at any time up to 1 year prior to the proposed project or intended to apply herbicides within 3 years after the proposed project. The landscape constraints and standard practices described below (Sections 3.2 and 3.3) would apply to the landscape described in the proposed Vegetation Treatment Program (Section 2.2).

- Alternative 3 – Treatments that Minimize Potential Impacts to Water Quality. This alternative addresses potentially significant effects associated with impacts to water quality and to threatened and endangered wildlife, plants, and fish, by restricting the landscape across which certain vegetation treatments could be applied. Some of the minimum landscape constraints and minimum management requirements noted below would be enhanced to reduce impacts to water quality and to special status wildlife, plants, and fish. Overall, a smaller landscape would be considered for treatment. Also, there would be fewer mechanical and herbicide treatments and more hand treatments.

- Alternative 4 – Treatments that Minimize Potential Impacts to Air Quality. This alternative addresses potentially significant effects associated with impacts to air quality, particularly in Air Quality Management Districts where air quality goals for particulate matter that is 10 microns in size (PM10), particulate matter that is 2.5 microns (PM2.5) and ozone have not been attained. In this alternative, substantially fewer acres would be treated with prescribed fire and as a result, substantially fewer acres are treated under this alternative as a whole due to the higher costs of other treatments.

In summary, Alternatives 1-4 have the following characteristics, which are summarized in Table 3.1.

- Alternative 1 – Status Quo has fewer treatable acres than the Proposed Program

- Alternative 2 – No Herbicide Treatment would not allow herbicide applications before, during or after other treatments and would occur on the same landscape as the Proposed Program.

- Alternative 3 – Minimize Potential Impacts to Water Quality has limitations on the landscape to protect water quality, but the range of treatments would be somewhat different compared to the Proposed Program.

- Alternative 4 – Minimize Potential Impacts to Air Quality has limitations on treatments, specifically the number of acres that could be treated with prescribed fire, and the landscape available for treatment is substantially less than the Proposed Program.

Table 3.1
Alternative Landscape and Treatment Comparison

Alternative	Landscape	Treatments
Alternative 1 Status Quo	Constrained from Program	Same as Program
Alternative 2 No Herbicide Treatment	Same as Program	Constrained from Program
Alternative 3 Minimize Impacts to Water Quality	Constrained from Program	Same as Program
Alternative 4 Minimize Impacts to Air Quality	Constrained from Program	Constrained from Program

3.2 Landscape Available to be Treated

All of the alternatives, (except for Alternative 1) have landscape constraints that are the same as or more restrictive than the Proposed Program. For Alternative 2, the No Herbicide Treatments Alternative, and Alternative 4 the Minimize Potential Impacts to Air Quality Alternative, the landscape available to be treated is the same as the landscape available for treatment in the

Proposed Program (approximately 38,000,000 acres). For Alternative 3, the landscape available to be treated is smaller than the Proposed Program landscape. Depending on the alternative, landscape constraints may be exactly the same as the Proposed Program (see Section 2.2) or they may contain different limitations, as described in each alternative. Landscape constraints that apply to the Proposed Program and to Alternatives 2-4 can be found in Section 2.2, unless they are superseded by more restrictive language contained within each of the alternatives. Constraints on Alternative 1 are described in Section 3.4 below.

3.3 Minimum Management Requirements

In addition to landscape constraints, Alternatives 2-4 are subject to a set of minimum management requirements (see Section 2.3) that may be the same as the Proposed Program, or they may be different as described below for each alternative. Alternative 1 does not contain minimum management requirements, per se; instead the program specific guidance described in Section 1.4. acts in lieu of minimum management requirements.

3.4 Alternative 1 - Status Quo

Under Alternative 1 - Status Quo (No Project), CAL FIRE would continue to implement vegetation treatments through existing programs, such as the VMP, Proposition 40, CFIP and PreFire Management (see Section 1.5 for a more complete description of these programs). Treatments would occur on SRA and LRA lands, but fewer vegetation types would be managed due to limitations associated with each of the programs.

Treatments would continue to emphasize changing vegetative structure to modify wildland fire behavior and improve non-industrial forestland quality on private forestlands within the State. Treatments would also meet a wide variety of other objectives, including protecting human life and property, reducing fire suppression costs, enhancing habitat, improving commodity production (e.g. rangeland forage and water yield), and reducing the potential for long-term detrimental effects of wildfire.

3.4.A Landscape Available to be Treated

Unlike the other alternatives, Alternative 1, the Status Quo Alternative, currently takes place on a somewhat smaller landscape than what the Proposed Program and Alternatives would take place on. Table 3.2 shows the acres that might be treated by bioregion and by treatment type based on review of the program guidance documents for the various programs that make up this alternative. Currently there is very little prescribed herbivory being implemented under any of the existing programs and herbicide applications are limited to projects funded solely by the CFIP program.

Table 3.2
Alternative 1 Treatable Landscape by Bioregion and Treatment Type

Bioregion	Total Available	Prescribed Fire	Manual	Mechanical	Herbicide	Herbivory
	Acres					
Klamath/North Coast	7,271,500	2,343,700	7,271,500	1,956,200	4,033,100	0
Modoc	2,980,000	960,500	2,980,000	801,700	1,652,800	0
Sacramento Valley	1,491,000	480,600	1,491,000	401,100	827,000	0
Sierra Nevada	6,002,500	1,934,700	6,002,500	1,614,800	3,329,300	0
Bay Area / Delta	3,291,800	1,061,000	3,291,800	885,600	1,825,800	0
San Joaquin Valley	1,782,600	574,600	1,782,600	479,600	988,700	0
Central Coast	4,680,000	1,508,500	4,680,000	1,259,000	2,595,700	0
Mojave	2,946,400	949,700	2,946,400	792,700	1,634,200	0
South Coast	2,483,500	800,500	2,483,500	668,100	1,377,500	0
Colorado Desert	1,895,200	610,900	1,895,200	509,900	1,051,200	0
Grand Total	**34,824,500**	**11,224,700**	**34,824,500**	**9,368,500**	**19,315,300**	**0**

3.4.B Minimum Management Requirements

None of the minimum management requirements described in Section 2.2 specifically applies to the Status Quo Alternative. Instead, limitations are described within the guidance documents (see Section 1.4) specific to each of the four programs that comprise CAL FIRE's vegetation management program. However, guidance language in the program manuals is similar to the minimum management requirements above, except there is no equivalent guidance similar to the following MMRs:

- MMR 2, operations on saturated soils
- MMR 12, 60' no spray buffer (not in guidance documents but applies legally)
- MMR 13, integrated pest management
- MMR 15, water drafting plan
- MMR 16, herbicide limitation

3.4.C Detailed Description of Treatments

Vegetation management activities include the disposal, rearrangement, or conversion of vegetation using various treatments. Treatment methods and actions include:

- Prescribed fire (underburn, jackpot burn, broadcast burn, pile burn, establishment of control lines)
- Mechanical (chaining, tilling, mowing, roller chopping, masticating, brushraking, skidding and removal, chipping, piling, pile burning)
- Manual (hand pull and grub, thin, prune, hand pile, pile burning, lop and scatter, hand plant)
- Prescribed herbivory (grazing by domestic animals, such as cattle, sheep, goats, horses)
- Herbicides (ground applications only, such as backpack spray, hypohatchet, pellet dispersal)

Under the Status Quo Alternative, herbicide treatments are limited solely to applications funded or regulated under the CFIP program.

Vegetation management treatment techniques may be applied singly or in any combination for a particular vegetation type to meet specific objectives of resource management. Within existing physical,

environmental, ecological, social, and legal constraints on the area to be treated, the method or methods used will be those that are most likely to achieve the desired objectives while protecting environmental quality. A detailed description of the vegetation treatments that would be applied under the Status Quo is described in Section 2.5.

Historically, treatment acreage has averaged about 47,000 acres per year, with approximately 200,000 to 700,000 acres treated in any ten-year period. Based on recent trends, average project size is expected to be around 260 acres.

The distribution of treatments and the annual acreage proposed for treatment in Alternative 1 is shown in Table 3.3.

Table 3.3
Alternative 1 (Status Quo) 10-Year Treatment Acreage by Bioregion 1/

Bioregion	Total Landscape Acres in Bioregion	Distribution of Treatments	Acreage Proposed for Treatment First 10 Years	Approximate Annual Acreage Treated
North Coast/Klamath	7,271,500	13.0%	61,100	6,110
Modoc	2,980,000	1.5%	7,050	710
Sacramento Valley	1,491,000	16.0%	75,200	7,520
Sierra	6,002,500	22.0%	103,400	10,340
Bay Area	3,291,800	8.0%	37,600	3,760
San Joaquin	1,782,600	6.0%	28,200	2,820
Central Coast	4,680,000	20.0%	94,000	9,400
Mojave	2,946,400	0.5%	2,350	240
South Coast	2,483,500	9.0%	42,300	4,230
Colorado Desert	1,895,200	4.0%	18,800	1,880
Total	**34,824,500**	**100.0%**	**470,000**	**47,010**

1/ Treatment effects are based on ~ 63% of treatments using prescribed fire, ~21% use mechanical treatments, ~ 12% use hand treatments, ~4% use herbicides and ~ 0% use prescribed herbivory.

3.5 Alternative 2 - No Herbicide Alternative

The No Herbicide Alternative proposes to treat vegetation without herbicides in order to meet the goals previously described. CAL FIRE does not have regulatory authority over herbicides. The U.S. Environmental Protection Agency (EPA) regulates herbicide use nationwide and has exclusive authority over herbicide labeling. Use of an herbicide is limited to the applications and restrictions on the label, and the label restrictions are legally enforceable. The California Department of Pesticide Regulation (DPR) regulates herbicides within the State of California and has legal authority to adopt restrictions on herbicide use that are more stringent than federal regulatory requirements. (See 7 U.S.C.A. Sec. 136v.)

Alternative 2 would be implemented using language from SB 1084, approved September 22, 2005, which enables the Director of CAL FIRE to enter into contracts with the owner of private property, provided that the contract is consistent with the regulations of the Board of Forestry (BOF).

Alternative 2 would require the BOF to issue regulations preventing the Director from entering into contracts with private landowners who have previously applied herbicides to the project area up to 1 year prior to initiation of the project or who intend to apply herbicides up to 3 years after completion of the project. If adopted, this alternative would also require that the environmental checklist contain several items that would help the director make a determination as to whether the applicant intended to apply herbicides within the prohibited timeframe.

Under this alternative, vegetation may be treated using prescribed fire, by hand, mechanically by using equipment, and by prescribed herbivory using domestic animals. Combinations of these treatments may occur in order to achieve the desired objective. Herbicides would not be used and there would be a prohibition on pre project and post project herbicide applications within a stated time period.

3.5.A Landscape Available To Be Treated

Alternative 2 would take place on the same landscape as the Proposed Program (approximately 38,000,000 acres) and with the landscape constraints noted in Section 2.2 above.

3.5.B Minimum Management Requirements

The major difference between Alternative 2 and the other alternatives is that all of the minimum management requirements noted in Section 2.3 would be implemented except that the language in minimum management requirement 11 would be deleted (but not renumbered) and 16 would be modified as shown below:

16. Pre-project, project and post-project herbicide treatments would not be allowed under any of the programs used to implement vegetation treatments, including herbicide treatments now allowed under the CFIP program.

Minimum management requirement 12 (court orders protecting special status species) is a federal requirement that the department does not have the authority to change. However, implementation of minimum management requirement 12 would be moot for projects under this alternative because the alternative does not allow the prescriptive use of any herbicides.

3.5.C Treatable Landscape

Table 3.4 shows that after application of the landscape constraints noted in Section 2.2, and the minimum management requirements described in Section 3.5.B, Alternative 2 could be implemented on the following number of treatable acres:

Table 3.4
Alternative 2 Treatable (Low Constraint) Landscape by Bioregion and Treatment Type

Bioregion	Total Available	Prescribed Fire	Manual	Mechanical	Herbicide	Herbivory
	Acres					
Klamath/North Coast	8,158,000	4,048,700	8,158,000	1,011,900	0	8,158,000
Modoc	3,616,900	2,426,400	3,616,900	2,216,400	0	3,616,900
Sacramento Valley	1,524,300	381,500	1,524,300	506,800	0	1,524,300
Sierra Nevada	6,605,500	1,591,200	6,605,500	1,674,500	0	6,605,500
Bay Area / Delta	3,346,500	425,600	3,346,500	65,100	0	3,346,500
San Joaquin Valley	1,799,800	147,900	1,799,800	572,900	0	1,799,800
Central Coast	4,989,200	1,648,500	4,989,200	735,700	0	4,989,200
Mojave	3,112,800	965,200	3,112,800	2,250,200	0	3,112,800
South Coast	2,737,600	42,800	2,737,600	97,400	0	2,737,600
Colorado Desert	2,067,800	557,000	2,067,800	1,080,700	0	2,067,800
Grand Total	**37,958,400**	**12,234,800**	**37,958,400**	**10,211,600**	**0**	**37,958,400**

3.5.D Detailed Description of Treatments

Vegetation management activities include the disposal, rearrangement, or conversion of vegetation using various treatments. Treatment methods and actions include:

- Prescribed fire (underburn, jackpot burn, broadcast burn, pile burn, establishment of control lines).
- Mechanical (chaining, tilling, mowing, roller chopping, masticating, brushraking, skidding and removal, chipping, piling, pile burning).
- Manual (hand pull and grub, thin, prune, hand pile, pile burning, lop and scatter, hand plant).
- Prescribed herbivory (grazing by domestic animals, such as cattle, sheep, goats, horses).

Vegetation management treatment techniques may be applied singly or in any combination for a particular vegetation type to meet specific objectives of resource management. Within existing physical, environmental, ecological, social, and legal constraints on the area to be treated, the method or methods used will be those that are most likely to achieve the desired objectives while protecting environmental quality.

A full description of the vegetation treatments that would be applied under Alternative 2 is described in detail in Section 2.5, except that herbicides would not be used. The distribution of treatments and the annual acreage proposed for treatment in Alternative 2 are shown in Table 3.5.

Table 3.5
Alternative 2 Proposed Treatment Acreage by Bioregion

Bioregion	Total Landscape Acres in Bioregion	Distribution of Treatments	Acreage Proposed for Treatment First 10 Years	Approximate Annual Acreage Treated
North Coast/Klamath	8,158,000	11.7%	253,500	25,350
Modoc	3,616,900	10.3%	223,200	22,320
Sacramento Valley	1,524,300	14.4%	312,000	31,200
Sierra	6,605,500	19.8%	429,100	42,910
Bay Area	3,346,500	7.2%	156,000	15,600
San Joaquin	1,799,800	5.4%	117,100	11,710
Central Coast	4,989,200	17.5%	380,000	38,000
Mojave	3,112,800	0.9%	20,000	2,000
South Coast	2,737,600	9.5%	205,400	20,540
Colorado Desert	2,067,800	3.3%	72,600	7,260
Total	**37,958,400**	**100.0%**	**2,168,900**	**216,890**

1/ Treatment effects are based on ~ 57% of treatments using prescribed fire, ~22% use mechanical treatments, ~ 12% use hand treatments, ~0% use herbicides and ~ 9% use prescribed herbivory.

3.6 Alternative 3 - Treatments that Minimize Potential Effects to Water Quality

Under Alternative 3, the same Vegetation Treatment Program treatments described in Section 2.5 would be available for use on a more tightly constrained landscape than the landscape prescribed for the Proposed Program or for Alternative 2. Landscape constraints to protect water quality (generally landscape constraint 1 and 2) would be modified so that buffer widths for mechanical treatments and prescribed fire would be the maximum width described in the CA Forest Practice Regulations (FPRs). In addition, ground-disturbing treatments would not be applied on areas where the post-treatment erosion hazard was rated as high [or extreme]. More stringent landscape constraints and MMRs would be applied to protect special status species. Finally, an additional landscape constraint would be implemented to add additional protections for the 147 endangered plant community types (out of the 619 rare natural communities on the CNDDB list) listed by the Department of Fish and Game.

3.6.A Landscape Available To Be Treated

Several of the treatments in Alternative 3 would take place on a smaller landscape than the Proposed Program because the landscape constraints would be substantially different. Landscape constraints numbers 1, 2, and 5 would be changed as described below, and new landscape constraints numbers 6 and 7 would be added, while landscape constraints numbers 3 and 4 would remain the same.

1. A WLPZ will be established on each side of all Class I and II watercourses that is 150 feet on each side of Class I watercourses and 100 feet on each side of Class II watercourses. Within the WLPZ, riparian vegetation will be not be disturbed and any non-riparian vegetation significant to maintenance of watercourse shade and temperature within the WLPZ will not be disturbed

when activities are conducted that might potentially remove streamside shade. Vegetation in Class III watercourses will be retained to trap sediment.

2. Heavy earth-moving equipment working on the project area is prohibited from working within 100-150 feet slope distance of the high water mark of a Class I or II watercourse except when performing fish and wildlife habitat improvement practices or forestland conservation practices. Wider protection zones may be required following an environmental review of the project.
5. No treatment "buffer" zones consistent with regulatory guidelines and recognized species-specific conservation measures shall be implemented in areas where special status species as defined by DFG (DFG, 2006) are known to occur. Occurrence information will be gathered primarily by a query of the most recent reasonably available and appropriate databases for biological information, and other reasonably available sources such as California Natural Diversity Database (CNDDB, 2006) or to the California Department of Fish and Game's BIOS database (DFG, 2007).
6. Heavy equipment and prescribed fire will not take place on lands classified as high erosion potential in watersheds designated as high priority for water quality improved actions by Regional Water Quality Control Boards and/or the State Water Resources Control Board.
7. Treatments will not take place in endangered plant community types identified in the most recent version of the CNDDB or BIOS unless such treatments will enhance the health of the plant community and been agreed to by specialists familiar with the specific plant community.

3.6.B Minimum Management Requirements

All of the minimum management requirements noted in Section 2.3 above would be implemented as described, except that MMR 15, water drafting would be further restricted by requiring that specific water drafting requirements be in place when drafting water within the habitat of special status species as described below:

15. When drafting water from waterbodies containing special status fish, reptiles and amphibians, or likely to contain habitat of special-status species if surveys are not conducted (e.g. for standby fire fighting equipment for prescribed fire, for watering roads, etc) the applicants operations will generally conform to the current CA Forest Practice Rules for water drafting, at 14 CCR 916.9(r).

3.6.C Treatable Landscape

Table 3.6 shows that for Alternative 3, after application of the landscape constraints noted in Section 3.6.A and the minimum management requirements described in Section 3.6.B, the following number of acres would be treatable. Note that mechanical treatments are heavily constrained as a result of limitations near watercourses and on lands classified as having a high [or extreme?] erosion hazard after treatment. Compared to the Proposed Program, which could potentially treat up to approximately 10,211,000 acres mechanically, Alternative 3 would treat approximately 4,262,000 acres with heavy equipment.

Table 3.6
Alternative 3 Treatable (Low Constraint) Landscape by Bioregion and Treatment Type

Bioregion	Total Available	Prescribed Fire	Manual	Mechanical	Herbicide	Herbivory
	Acres					
Klamath/North Coast	8,158,000	2,092,000	8,158,000	273,900	5,322,200	8,158,000
Modoc	3,616,900	1,312,100	3,616,900	799,200	2,911,900	3,616,900
Sacramento Valley	1,524,300	239,900	1,524,300	167,500	564,400	1,524,300
Sierra Nevada	6,605,500	1,967,000	6,605,500	215,900	4,828,000	6,605,500
Bay Area / Delta	3,346,500	72,700	3,346,500	32,300	663,500	3,346,500
San Joaquin Valley	1,799,800	628,300	1,799,800	303,700	787,600	1,799,800
Central Coast	4,989,200	579,500	4,989,200	93,000	2,615,000	4,989,200
Mojave	3,112,800	2,357,100	3,112,800	2,059,900	2,303,900	3,112,800
South Coast	2,737,600	18,900	2,737,600	15,200	186,200	2,737,600
Colorado Desert	2,067,800	301,900	2,067,800	301,700	870,800	2,067,800
Grand Total	**37,958,400**	**9,569,300**	**37,958,200**	**4,262,300**	**21,053,400**	**37,958,200**

3.6.D Detailed Description of Treatments

Vegetation management activities include the disposal, rearrangement, or conversion of vegetation using various treatments. Treatment methods and actions include:

- Prescribed fire (underburn, jackpot burn, broadcast burn, pile burn, establishment of control lines).
- Mechanical (chaining, tilling, mowing, roller chopping, masticating, brushraking, skidding and removal, chipping, piling, pile burning).
- Manual (hand pull and grub, thin, prune, hand pile, pile burning, lop and scatter, hand plant).
- Prescribed herbivory (grazing by domestic animals, such as cattle, sheep, goats, horses).
- Herbicides (ground applications only, such as backpack spray, hypohatchet, pellet dispersal).

Vegetation management treatment techniques may be applied singly or in any combination for a particular vegetation type to meet specific objectives of resource management. Within existing physical, environmental, ecological, social, and legal constraints on the area to be treated, the method or methods used will be those that are most likely to achieve the desired objectives while protecting environmental quality. A detailed description of the vegetation treatments that would be applied under Alternative 3 is described in Section 2.5

In this alternative, herbicide treatments would be allowed on the landscape subject to landscape constraints and minimum management requirements and would not be limited to the treatments funded and or regulated by the CFIP program.

The distribution of treatments and the annual acreage proposed for treatment in Alternative 3 are shown in Table 3.7.

Table 3.7
Alternative 3 Proposed Treatment Acreage by Bioregion 1/

Bioregion	Total Landscape Acres in Bioregion	Distribution of Treatments	Acreage Proposed for Treatment First 10 Years	Approximate Annual Acreage Treated
North Coast/Klamath	8,158,000	11.7%	253,500	25,350
Modoc	3,616,900	10.3%	223,200	22,320
Sacramento Valley	1,524,300	14.4%	312,000	31,200
Sierra	6,605,500	19.8%	429,100	42,910
Bay Area	3,346,500	7.2%	156,000	15,600
San Joaquin	1,799,800	5.4%	117,100	11,710
Central Coast	4,989,200	17.5%	380,000	38,000
Mojave	3,112,800	0.9%	20,000	2,000
South Coast	2,737,600	9.5%	205,400	20,540
Colorado Desert	2,067,800	3.3%	72,600	7,260
Total	**37,958,400**	**100.0%**	**2,168,900**	**216,890**

1/ Treatment effects are based on ~ 56% of treatments using prescribed fire, ~19% use mechanical treatments, ~ 11% use mechanical treatments, ~4% use herbicides and ~ 10% use prescribed herbivory.

3.7 Alternative 4 – Treatments that Minimize Potential Impacts to Air Quality

The purpose of an alternative that specifically addresses air quality is that most of the State's air basins are in a non-attainment status for PM10 and sulfates. In addition, about half of all air basins are in non-attainment status for PM2.5 and ozone. Generally, each of the 35 air quality districts has a maximum threshold of 15 tons per year for PM10, 100 tons per year for CO and 15 tons per year for NOx. (Jones and Stokes, 2000 page 6-6). Total acreage that could be burned statewide under these thresholds would be no more than 2,200 acres for PM10 and 2,400 acres for CO. Even though these maximums are not legally binding, they have been incorporated into the design of this alternative.

The landscape for this alternative would be the same as the Proposed Program however the Treatable landscape by treatment type would be substantially different than the Program. Also, treatments would be modified so that prescribed fire in non-attainment basins would only take place on Burn Days, with no variances allowed. Eliminating the use of variances would ensure that air quality would not be degraded beyond that allowed in the Implementation Plans. Finally, total output of PM10 and CO would be limited to the statewide total allowed in the State Implementation Plans noted above. This last restriction would drastically limit the amount of acreage that could be burned. Other treatments would be increased, but due to increased costs, the overall program under this alternative would treat fewer acres.

3.7.A Landscape Available To Be Treated

Alternative 4 would take place on the same landscape available for treatment in the Proposed Program, as described in Section 3.2 (approximately 38,000,000), but with the landscape constraints noted in Section 2.2.

3.7.B Minimum Management Requirements

All of the minimum management requirements noted in Section 3.3 would be implemented as described, except that MMR 4 would be changed to allow burning only on Burn Days in non-attainment basins – variances would not be allowed. Burning on Burn Days and with variances could continue in attainment air basis.

4. For basins in attainment, burning will only occur on Burn Days as determined by the Air Pollution Control District or Air Quality Management Districts, except 1) on areas declared to be fire hazards or 2) unless a permit to burn on No-Burn Days has been obtained from an Air Pollution Control District when denial to burn would threaten imminent and substantial economic loss. In non-attainment basins, burning will only be allowed on Burn Days.

3.7.C Treatable Landscape

Table 3.8 shows that after application of the landscape constraints noted in Section 2.2. and the minimum management requirements described in Section 3.7.B and Section 2.3, Alternative 4 could be implemented on the following number of treatable acres: Because the number of basins in non-attainment status for PM10 is so large and the requirement to burn on burn days only without variances is so small (generally only 11 of 30 days per month are normally available burn days see Section 5.6.4), the acreage that could be treated using prescribed fire is severely limited compared to the Program.

Table 3.8
Alternative 4 Treatable (Low Constraint) Landscape by Bioregion and Treatment Type

Bioregion	Total Available	Prescribed Fire	Manual	Mechanical	Herbicide	Herbivory
	Acres					
Klamath/North Coast	8,158,000	85,800	8,158,000	1,011,900	5,322,200	8,158,000
Modoc	3,616,900	522,700	3,616,900	2,216,400	2,911,900	3,616,900
Sacramento Valley	1,524,300	19,000	1,524,300	506,800	564,400	1,524,300
Sierra Nevada	6,605,500	6,200	6,605,500	1,674,500	4,828,000	6,605,500
Bay Area / Delta	3,346,500	0	3,346,500	65,100	663,500	3,346,500
San Joaquin Valley	1,799,800	400	1,799,800	572,900	787,600	1,799,800
Central Coast	4,989,200	9,600	4,989,200	735,700	2,615,000	4,989,200
Mojave	3,112,800	727,200	3,112,800	2,250,200	2,303,900	3,112,800
South Coast	2,737,600	7,200	2,737,600	97,400	186,200	2,737,600
Colorado Desert	2,067,800	214,900	2,067,800	1,080,700	870,800	2,067,800
Total	**37,958,400**	**1,593,000**	**37,958,200**	**10,211,600**	**21,053,400**	**37,958,200**

3.7.D Detailed Description of Treatments

Vegetation management activities include the disposal, rearrangement, or conversion of vegetation using various treatments. Treatment methods and actions include:

- Prescribed fire (underburn, jackpot burn, broadcast burn, pile burn, establishment of control lines).
- Mechanical (chaining, tilling, mowing, roller chopping, masticating, brushraking, skidding and

removal, chipping, piling, pile burning).

- Manual (hand pull and grub, thin, prune, hand pile, pile burning, lop and scatter, hand plant).
- Prescribed herbivory (grazing by domestic animals, such as cattle, sheep, goats, horses).
- Herbicides (ground applications only, such as backpack spray, hypohatchet, pellet dispersal).

Vegetation management treatment techniques may be applied singly or in any combination for a particular vegetation type to meet specific objectives of resource management. Within existing physical, environmental, ecological, social, and legal constraints on the area to be treated, the method or methods used will be those that are most likely to achieve the desired objectives while protecting environmental quality. A detailed description of the vegetation treatments that would be applied under Alternative 4 is described in Section 2.5.

Under Alternative 4, herbicide treatments would be allowed subject to the same constraints and MMRs as in the Proposed Program.

Alternative 4 would only treat about 93,000 acres annually, compared to the 216,910 acres per year under the Proposed Program. This estimate is based on historical trends, which indicate that prescribed burning is the least expensive treatment method available on a per acre basis (see footnote 1/ to Table 3.9 for a description of treatment costs). About 8% of all treatments are expected to be prescribed fire, 38% are expected to be hand treatments, 25% are expected to be mechanical treatments, 5% are expected to be chemical treatments and 24% are expected to be treatments using prescribed herbivory. Based on recent trends, average project size is expected to be around 260 acres.

The distribution of treatments and the annual acreage proposed for treatment in Alternative 4 are shown in Table 3.9.

Table 3.9
Alternative 4 Proposed Treatment Acreage by Bioregion 1/

Bioregion	Total Landscape Acres in Bioregion	Distribution of Treatments	Acreage Proposed for Treatment First 10 Years	Approximate Annual Acreage Treated
North Coast/Klamath	8,158,000	11.2%	104,600	10,460
Modoc	3,616,900	14.8%	137,300	13,730
Sacramento Valley	1,524,300	13.8%	128,700	12,870
Sierra	6,605,500	19.0%	176,900	17,690
Bay Area	3,346,500	6.9%	64,300	6,430
San Joaquin	1,799,800	5.2%	48,200	4,820
Central Coast	4,989,200	16.2%	150,900	15,090
Mojave	3,112,800	0.9%	8,100	810
South Coast	2,737,600	9.1%	84,800	8,480
Colorado Desert	2,067,800	2.9%	26,800	2,680
Total	**37,958,400**	**100.0%**	**930,600**	**93,060**

1/ Treatment effects are based on ~ 8% of treatments using prescribed fire, ~25% use mechanical treatments, ~ 38% use hand treatments, ~5% use herbicides and ~ 24% use prescribed herbivory. The allocation of treatments is based on an assessment of the relationship between the cost of prescribed fire treatments and the cost of mechanical treatments as well as a consideration of the landscape acreage that could be treated by prescribed fire or by mechanical and hand treatments.

3.8 Summary of Treatments and Landscape Constraints

Table 3.10 summarizes the Proposed Program and the Alternatives by the total landscape, the constrained landscape, the likely number of acres to be treated and the differences in acres treated by treatment type.

Table 3.10
Comparison of Proposed Program and Alternatives

Element	Proposed Program	Alternative 1 Status Quo	Alternative 2 No Herbicide Treatments	Alternative 3 Minimize Water Quality Impacts	Alternative 4 Minimize Air Quality Impacts
Approx. Total Landscape	37,958,400 ac	34,824,500 ac	37,958,400	37,958,400ac	37,958,400ac
Landscape Treatable with Prescribed Fire	12,234,800 ac	11,224,700 ac	12,234,800	9,569,300 ac	1,593,000 ac
Landscape Treatable with Mechanical Treatments	10,211,600 ac	9,368,500 ac	10,211,600 ac	4,262,300 ac	10,211,600 ac
Landscape Treatable with Hand Treatments	37,958,400 ac	34,824,500 ac	37,958,400 ac	37,958,400 ac	37,958,400 ac
Landscape Treatable with Herbicides	21,053,500 ac	19,315,300 ac	0	21,053,500 ac	21,053,500 ac
Landscape Treatable with Herbivory	37,958,400 ac	0 ac	37,958,400	37,958,400ac	37,958,400ac
Yearly Acreage Treated	216,910 ac	47,000 ac	216,910 ac	216,910 ac	93,000 ac
Projected 10 Year Treatment Acreage	~ 2.17 MM ac	~ 470 M ac	~ 2.17 MM ac	~ 2.17 MM ac	~ 930 M ac
Percent Prescribed Fire	53%	63%	56%	56%	8%
Percent Hand Treatments	18%	21%	22%	19%	25%
Percent Mechanical	10%	12%	12%	11%	38%
Percent Herbicides	9%	4%	0%	4%	5%
Percent Rx Herbivory	10%	0%	10%	10%	24%

(M = 1000 acres, MM = 1,000,000 acres)

3.9 Alternatives Considered But Eliminated From Detailed Analysis

Three alternatives were considered but eliminated from detailed analysis as described below.

An alternative was developed similar to the Proposed Program but which only treated about 70,000 acres instead of the 216,910 acres proposed under the Proposed Program. This alternative projected that treatment acreages would increase at a rate consistent with current program treatment accomplishments over the past 20 years. However, this alternative was eliminated from detailed analysis because it would fall short of the goals of the Proposed Program from a fuel treatment and fire behavior standpoint. A treatment of 70,000 acres per year would require 142 years to treat the 10 million acres of low constraint lands identified for the Proposed Program.

A second, "highly constrained" alternative was also considered but eliminated from detailed analysis. This alternative would have included constraints from both Alternatives 3 and 4, combined into one alternative. This alternative was rejected because it too would not have been able to meet the goals of the program from a fuel treatment and fire behavior standpoint. Too many acres would have been constrained out of treatment, or would only have been treatable using hand treatments. Because hand treatments are substantially more expensive than the other treatments, far fewer acres would have been treatable under this alternative than either Alternative 3 or Alternative 4, let alone under the Proposed Program.

The third alternative considered but eliminated from detailed analysis would have placed most of the treatments in areas where there currently is a high incidence of wildfire. As a result, this alternative would

have placed the 216,910 acres of treatments into the South Coast and Sierra bioregions. This alternative was eliminated from detailed analysis because the likely consequences of treating such a small proportion of the state were expected to outweigh the benefits in the two bioregions. In addition, treating only two bioregions would have resulted in no benefits to other bioregions from treatments to reduce wildland fire, improve forest and range conditions, etc.

3.10 Environmentally Superior Alternative

CEQA Guidelines §15126.6(e)(2) require a lead agency in an EIR to identify an Environmentally Superior Alternative. After considering all of the environmental consequences of implementing the Proposed Program and the Alternatives, the Proposed Program is considered the Environmentally Superior Alternative. See Table 3.11 for a comparison of the Program and the Alternatives.

Overall, the Proposed Program is the environmentally superior alternative as it has a combination of the most benefits and least effects when considering all of resources. Alternative 3 is close to the Proposed Program, however while it treats the same number of acres per decade as the Proposed Program it would not have nearly as large of a treatable landbase open to prescribed fire and mechanical treatments. This reduced landscape would not initially be constraining, but over time the acreage that could be treated with prescribed fire or mechanical treatments would become limiting. In addition, limitations on what could be treated at the project level could create a more complex mosaic of treated and untreated vegetation that might not reduce wildfire behavior to as great an extent as the Proposed Program.

Table 3.11 following provides a general comparison of the Program and Alternatives in terms of their predicted direct impacts to resources. Table 3.12 shows the potential indirect and cumulative impacts of implementing the Program and Alternatives. The ratings of effects shown in Table 3.11 are based on mitigation measures being applied as needed to reduce impacts to less than significant. A detailed description of the potential direct impacts to various resources as well as any measures prescribed to reduce their impacts are discussed in Chapter 5.

The ratings of indirect and cumulative effects shown in Table 3.12 are based on mitigation measures being applied as needed to reduce impacts to less than significant. A detailed description of the potential indirect or cumulative impacts to various resources as well as any measures prescribed to reduce their impacts are discussed in Chapter 6.

Table 3.11
Comparison of The Environmental Impacts to Resources of Implementing the Proposed Program or the Alternatives 1/

Element	Program	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	Summary of Resource Impacts				
Wildfire Intensity/Occurrence	MB	NA/NB	NA/NB	NA/NB	NA/NB
Climate Change	NA	NA/NB	NA	NA	NA
Aquatic Resources	NA	NA	NA	NA	NA
Wildlife Resources	NB/MB	NA/NB	NB/MB	NB/MB	NB/MB
Vegetative Resources	NA/NB	NA/NB	NA/NB	NA/NB	NA/NB
Invasives	NA/NB	NA/NB	NA/NB	NA/NB	NA/NB
Air Quality	NA/NB	NA/NB	NA/NB	NA/NB	NA/NB
Water Quality	NA	NA	NA	NB	NA
Cultural, Archaeological	NA	NA	NA	NA	NA
Population and Housing	NA/NB	NA/NB	NA/NB	NA/NB	NA/NB
Transportation/Traffic	NA	NA	NA	NA	NA
Utilities and Energy	NA	NA	NA	NA	NA
Noise	NA/MA	NA	MA	NA/MA	NA
Visual/Aesthetic	NA	NA	NA	NA	NA
Recreation	NA	NA	NA	NA	NA
Geology/Soils	NA/MA	NA	NA/MA	NA	NA
Hazardous Materials	NA	NA	NA	NA	NA
Herbicides					
Wildlife Resources	MA	NA	NA 2/	NA	NA
Vegetative Resources	NA	NA	NA	NA	NA
Air Quality	NA	NA	NA	NA	NA
Water Quality	NA	NA	NA	NA	NA
Recreation	NA	NA	NA	NA	NA
Geology/Soils	NA	NA	NA	NA	NA
Human Health	NA	NA	NA	NA	NA

1/ Key to effects: adverse effects are those effects which degrade the diversity, structure, size, integrity, abundance or number of; or are outside the natural range of variability, for the resource at issue. Beneficial effects are those effects that improve the diversity, structure, size, integrity, abundance or number of; or are within the natural range of variability, for the resource at issue. SA/SB – significant adverse or beneficial effects are those effects that are substantial, highly noticeable, at the watershed scale; and often irreversible. MA/MB - moderately adverse or beneficial effects - those effects that can be detected beyond the affected area, but are transitory and usually reversible. NA/NB - negligible adverse or beneficial effects - those effects that are imperceptible or undetectable.
2/ A rating of NA is assigned to the No Herbicide alternative to account for the likely off program use of herbicides.

Table 3.12
Summary of Potential Adverse and Beneficial Cumulative Effects at Project or Bioregional Scales of Assessment

	Cumulative Effects Potential for the Various EIR Alternatives*					
	Potential for Significant *Adverse* Cumulative Effects			Potential for Significant *Beneficial* Cumulative Effects		
Resource Area	Yes after mitigation (a)	No after mitigation (b)	No reasonably potential significant adverse effects (c)	Yes without mitigation (a)	Yes after mitigation (b)	No reasonably potential significant beneficial effects (c)
Geology and Soils – 2a: increase landslides		X				
Geology and Soils – 2b: increase soil erosion		X				
Wildland Fire Risk and Severity		X		X		
Wildlife and Botanical Resources –1A, 1B: species of concern, habitat, or range				X		4
Wildlife and Botanical Resources—1D: conservation plan objectives		X			X	
Wildlife and Botanical Resources--1C,1E: species movement and population sustainability				X		
Wildlife and Botanical Resources—1F: non-native invasives		X			X	
Wildlife and Botanical Resources—1G: habitat elements		X			X	
Aquatic and Riparian Resources—1H, 1I, 1J: sediment, large woody debris, streambank stability		X				
Aquatic and Riparian Resources—1K: headwater stream processes						
Aquatic and Riparian Resources—1L: aquatic nutrient input						
Air Resources (Quality)		X	3		X	
Air Resources (Visibility)		X	3		X	
Visual / Aesthetic Resources			X			
Water Resources – 1a: alter flows			X			
Water Resources – 1b: degrade water quality		X				
Recreation Resources		X				

Table 3.12
Summary of Potential Adverse and Beneficial Cumulative Effects at Project or Bioregional Scales of Assessment

	Cumulative Effects Potential for the Various EIR Alternatives*					
	Potential for Significant *Adverse* Cumulative Effects			Potential for Significant *Beneficial* Cumulative Effects		
Resource Area	Yes after mitigation (a)	No after mitigation (b)	No reasonably potential significant adverse effects (c)	Yes without mitigation (a)	Yes after mitigation (b)	No reasonably potential significant beneficial effects (c)
Archaeological and Cultural Resources			X	X		
Noise		X				
Population and Housing		X				
Transportation and Traffic			X			

Note: Unless otherwise stated an "X" in the matrix refers to both the Proposed Program and the alternatives. The number refers to the Alternatives 1 through 4.

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The Proposed Program treats almost five times as many acres (2.16 million acres/decade) as the Status Quo (470,000 acres/decade). Because the Proposed Program treats so many more acres than the Status Quo it is likely to reduce impacts from wildland fire over the Status Quo due to treated areas, particularly surface fire regimes, burning at lower severity. In addition, wildfire extent is likely to be slightly reduced after the first decade of treatments as a small number of watersheds statewide (mostly in the Southcoast, Sierra and San Joaquin bioregions) have 35% or more of their watershed area treated. From a wildlife standpoint, effects are expected to be slightly to moderately beneficial, particularly to non-listed species such as deer, quail, etc. On the other hand, the Proposed Program would have a negligible to moderate adverse effect to special status wildlife due to prescribed fire and mechanical treatments disrupting habitat of such species at a greater rate than would be "saved" due to reduced wildland fire intensity. Because of the desire to treat invasives, the Proposed Program would have a slightly adverse to slightly beneficial impact on invasives, since treatments, which are designed to extirpate invasives can also introduce invasive species to areas free of noxious weeds. From a soils standpoint, Program treatments are expected to have slightly to moderately adverse effects as these treatments occur on more acres per decade than the number of treated acres that burn due to wildfire at a lower severity level. The Proposed Program would have its biggest effect on air quality where the scope of the prescribed fire program (~ 115,000 acres burned annually) would produce significantly more emissions than would be "saved" by treated areas burning at lower severity during wildfire. The reason for this is that only about 16% of treated areas are expected to be burned by wildfire in any decade, and while fire severity is expected to drop from severe to low in surface fire regimes, it is not expected to drop to less than moderate in crown fire regimes. Also, treated crown fire ecosystems burning under severe fire weather conditions (e.g. Santa Ana fire weather conditions) are not expected to have significantly less emissions than untreated areas. Finally, from a climate change perspective, the Proposed Program would initially have a slightly adverse effect on CO_2 levels, as a combination of increased use of prescribed fire does not offset reduced wildfire intensity. However, over time, increased mechanical and hand treatments are expected to increase growth somewhat and sequester more CO_2, leading to a slight reduction in total carbon emissions after 30 years of treatments.

The Status Quo (Alternative 1) currently treats about 470,000 acres/decade. These treatments have likely reduced wildfire severity and extent, to some degree, but even with such treatments, which have been ongoing for the last 25 years, an average of 458 homes have burned per year since 2000 and suppression costs have been about $105.3 million annually. Air Quality impacts are, by definition, neutral since these effects have already been incorporated into Air District Smoke Management Plans and into the emission targets for each district. Effects in other resource areas are expected to be less than the Proposed Program, except in the critical area of wildland fire behavior, where the acreage severely burned by wildfire is expected to be higher than the Proposed Program and Alternatives since so few acres are treated per year.

Alternative 2 treats approximately the same acreage by treatment type as the Proposed Program except that it would not use herbicides and thus would reduce environmental controversy compared to the Proposed Program. On the other hand, this alternative would treat somewhat more acres using prescribed fire and mechanical treatments resulting in slightly more adverse effects than the Proposed Program. At the same time, not being able to use herbicides is likely to result in moderate adverse effects from invasives as these plants are expected to continue to expand in spite of mechanical and prescribed fire treatments which are less effective than herbicides.

As noted above, Alternative 3, with its water quality, soils, and geology emphasis potentially could reduce impacts to these resources compared to the Proposed Program. Alternative 3 would also offer expanded protection to special status species of wildlife and plants compared to the Proposed Program. However, Alternative 3 would treat somewhat more acreage with prescribed fire, which could lead to adverse effects to air quality. However, over the entire landscape of the state, only about 40% of the acres would be treated by mechanical treatments and only about 75% of the acres would be treated by prescribed fire during the life of the Program. As a result, with fewer acres treated overall, and with limitations on which acres could be treated within a particular project area, the resulting mosaic of vegetation could potentially be more severely affected by wildfire than the Proposed Program.

Alternative 4 treats far fewer acres than the Proposed Program and thus would have substantially less air quality impacts from prescribed fire. Due to substantially fewer acres treated, total particulate matter, NOx and other air pollutants would be less than the Proposed Program, although not proportionally less since the total acreage burned at moderate and severe levels as a result of BOTH wildfire and prescribed fire is only slightly less than under the Proposed Program. Other effects are expected to be midway between the Status Quo and the Proposed Program; e.g. effects to soils are expected to be only slightly adverse compared to the Program where the effects are expected to slightly to moderately adverse. On the other hand, the impact of Alternative 4 treatments to severity and occurrence of wildfire is only expected to be slightly beneficial as so few acres are treated annually.

Table 3.13 summarizes the extent to which the Proposed Program or the Alternatives meet the purpose and goals of the Vegetation Treatment Program described in Section 1.7. The Proposed Program would likely meet the goals established for the VTP in Section 1.7 to a greater degree than the Alternatives and the Status Quo. Again, Alternative 3 would come almost as close to meeting the goals for the VTP as the Proposed Program. However Alternative 3 would not meet the goals of the VTP to quite the same degree as the Program since the overall number of acres that Alternative 3 would treat during the life of the VTP would be quite a bit less than the Program.

Table 3.13
Goal Achievement Due to Implementing the Proposed Program or the Alternatives 1/

Goal 2/	Summary of Goal Achievement				
	Program	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Goal 1 – enhance forest health	+ +	0	+	+ +	+
Goal 2 – modify wildfire behavior	+ +	0	+ +	+	+
Goal 3 – reduce suppression costs	+ +	0	+ +	+	+
Goal 4 – restore natural range of plants	+ +	0	-	+ +	+
Goal 5 – maintain/improve air quality	-	0	-	-	0
Goal 6 – reduce watershed effects	+	0	+	++	0
Goal 7 – reduce non-native plants	++	0	-	++	+
Goal 8 – improve wildlife habitat	++	0	+	++	+
Goal 9 – provide a CEQA process	+	0	+	+	+

1/ Key to ratings, "+ +" strongly meets goal, "+" moderately meets goal, "0" neutral towards goal accomplishment, "-" moderately adverse towards goal accomplishment, " - -" strongly adverse to goal accomplishment.
2/ Goals (from Section 1.7)

1. Maintain and enhance forest and range land resources including forest health to benefit present and future generations.
2. Modify wildland fire behavior to help reduce catastrophic losses to life and property consistent with public expectation for fire protection.
3. Reduce the severity and associated suppression costs of wildland fires by altering the volume and continuity of wildland fuels.
4. Reduce the risk of large, high intensity fires by restoring a natural range of fire-adapted plant communities through periodic low intensity vegetation treatments.
5. Maintain or improve long term air quality through vegetation treatments that reduce the severity of large, uncontrolled fires that release air pollutants and greenhouse gases.
6. Vary the spatial and temporal distribution of vegetation treatments within and across watersheds to reduce the detrimental effects of wildland fire on watershed health.
7. Reduce noxious weeds and non-native invasive plants to increase desirable plant species and improve browse for wildlife and domestic stock.
8. Improve wildlife habitat by spatially and temporally altering vegetation structure and composition, creating a mosaic of successional stages within various vegetation types.
9. Provide a CEQA-compliant programmatic review document process/mechanism for other state or local agencies, which have a vegetation management program/project consistent with the VTP, to utilize this guiding document to implement their vegetation treatment programs/project.

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